26 no.11

PEST CONTROL

NOVEMBER 1958

How to Control Bedbugs: First of a 2-Part Series On Bedbugs and Human Lice . . . . . .Pg. 9

Insecticide Shortage and DDT - Resistance Blocked Control of This Bedbug Outbreak in Alaska, But Infestation Finally Was Licked by "Heat" Pg. 14

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NPCA's Oct. Convention Hears Forecast PCOs Will Establish "Clinics" in Next 25 Years . . Pg. 19

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SEPARATE

Here's Wayne K. Davis, Alling House Termite Inspection Bureau, Oakland, Calif., in his NPCA convention hotel room receiving long-distance telephone congratulations from fellow PCOs on the West Coast shortly after he was elected president of the National Pest Control Association last month. Listening in with him here is his wife, Vivian. For a complete round-up of what happened at the NPCA convention turn to article on page 19.

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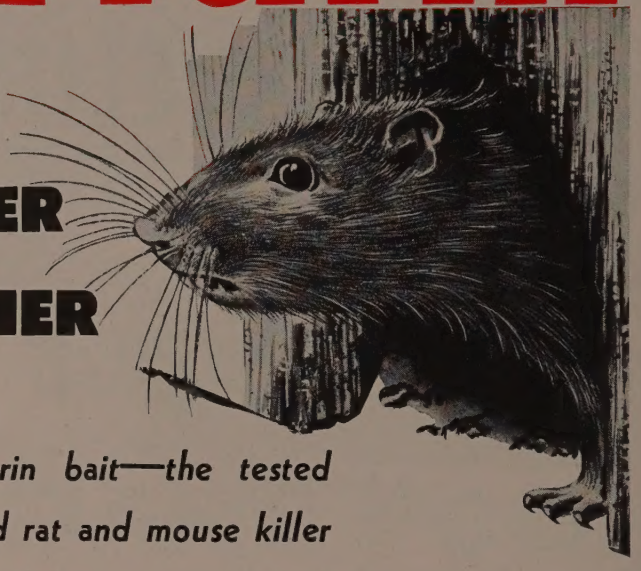

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Institutional Exhibits and PCOs

A PCO wrote Purdue University he was "shocked and amazed" to see that school's entomology exhibit at a recent Indiana state fair. The display emphasized the termite problem and how pre-construction treatment is accomplished.

J. J. Davis, Purdue's professor emeritus in entomology, and long-time booster of the pest control industry, decided it was time someone set the record straight on the obligation universities like Purdue and others have. His down-to-earth observations make this month's editorial.

"Occasionally state colleges and universities receive criticism from pest control operators for putting out publications giving recommendations for the control of this or that insect; also for providing exhibits dealing with insect control. First of all it should be stated such state institutions, as well as the U. S. Department of Agriculture, are obligated by law to provide information on insect control to benefit the general public. On hasty thought the conclusion might be drawn that such publications and exhibits compete with service provided by commercial companies such as structural pest control operators. Is this true?

"Frankly, it is our observation, most educational institutions are interested in aiding the service operator, as evidenced by the conferences and other aids provided in several sections of the United States and Canada. Usually publications and exhibits refer to services available through structural pest control companies, because the public is more frequently requesting information on where to get the work done than how it can be done.

"It is true that state and federal institutions recommend controls for various insects, or what one might call 'do-it-yourself' controls and yet we should not be concerned that the public will rush out and buy, let us say, chlordane or dieldrin, to control termites. We need more publicity on pest problems. More and more we need to attract public interest in the many pest problems and their relation to health and human welfare. It is our belief that service operators will get their share of business and benefit in direct proportion to the amount of public interest that can be created.

"Entomologists are indeed recommending methods of control but by so doing in news stories, demonstrations, exhibits, and lectures, calling attention to the importance and need of insect control for the health and well being of everyone, they are emphasizing the problems and calling them to the attention of the public. They thus enlarge the scope and field for the commercial PCO."

1933 OUR SILVER ANNIVERSARY YEAR 1958

PEST CONTROL

EVERY MONTH SINCE 1933

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PHIL OSBORNE, Assistant Editor
R. J. HOFFER, Circulation Manager

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Letters

Silicosis Is No Danger With Certain Silica Dusts

In the June issue of *Pest Control*, pg. 19, where our work with inert dusts was written up, a statement was made that these materials, upon inhalation, might cause the condition known as silicosis. Apparently the source for this information was not aware of the fact that many of these materials, even upon prolonged inhalation, will not cause silicosis. Since the silica dusts we are using are amorphous in nature and not crystalline we have been told by the manufacturers that, due to this characteristic, persons inhaling these dusts could not come down with silicosis.

I have medical reports from several companies stating that, after prolonged laboratory tests, animals showed no ill-effects upon inhalation of these materials; also, that these materials have been used in industry for a good number of years and there have been no cases of silicosis developing from the inhalation of these compounds.

Dr. I. Barry Tarshis
Asst. Professor of Entomology
University of California
Los Angeles, Calif.

Answer to Resistance? Maybe

Is there a sure-fire answer to roach resistance? Perhaps not chemically as yet, but there are other ways to fight it.

And one method is by establishing a closer relationship among local pest control operators.

Take it upon yourself to call the boys in your city together for a luncheon every month. Discuss your problems. There are no longer any secrets in our business. If you have a better method of controlling roaches, let your competitor in on the answer.

If your competitor doesn't realize his costs of doing business, explain them to him.

Try to understand your competitor's problems. That way, he'll think twice before undercutting your price and might even go all the way with you in raising standards and prices in this business. We're all dependent upon each other in this industry.

Our charges for pest control will have to be placed on a different basis. If you obtain a new account, a fair cleanout charge should be arrived at. This should vary greatly depending upon degree of infestation, the neighborhood, etc.

Give the customer a thorough job on his one trip. If additional trips are necessary during the month, added fees should be charged for the service. You'll find the customer that sees a roach and calls you from across town will think twice before he calls when added charges are tacked onto his bill.

If an apartment building is located in an area where roaches are rampant, additional charges should be made if return trips are necessary in less than a month.

If we all become oriented to these problems and discuss them intelligently among ourselves, we can lead this business on to new prosperity. If we don't, we'll be worse off than ever.

Leonard Hill
Laing Exterminating Co.
Cleveland, Ohio

Missing "And" Twists Meaning

I was impressed with the reproduction of the photographs in my fabric pest story published in your September issue, and must congratulate you on the results.

However, I was rather shocked to note one glaring error: the deletion of the word "and" at one point in the article, which resulted in a basic error. I refer to the second paragraph of the paper where the statement is made that we now call dermestids clothes moths. It should have read "man . . . inadvertently invited the dermestid *and* what we now call clothes moths."

Roy J. Pence
Associate Specialist
Department of Entomology
University of California
Los Angeles, California

Pest Control welcomes expressions of opinions from its readers. Send ideas and comments as briefly as possible to James A. Nelson, Editor, Pest Control, 1900 Euclid Avenue, Cleveland 15, Ohio.

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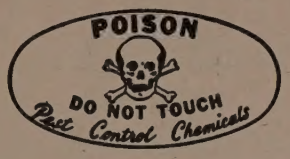

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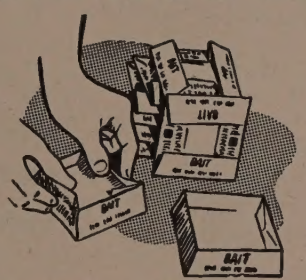

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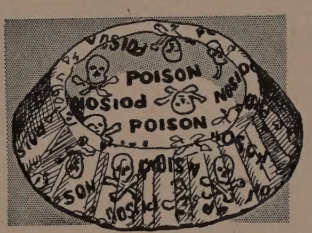

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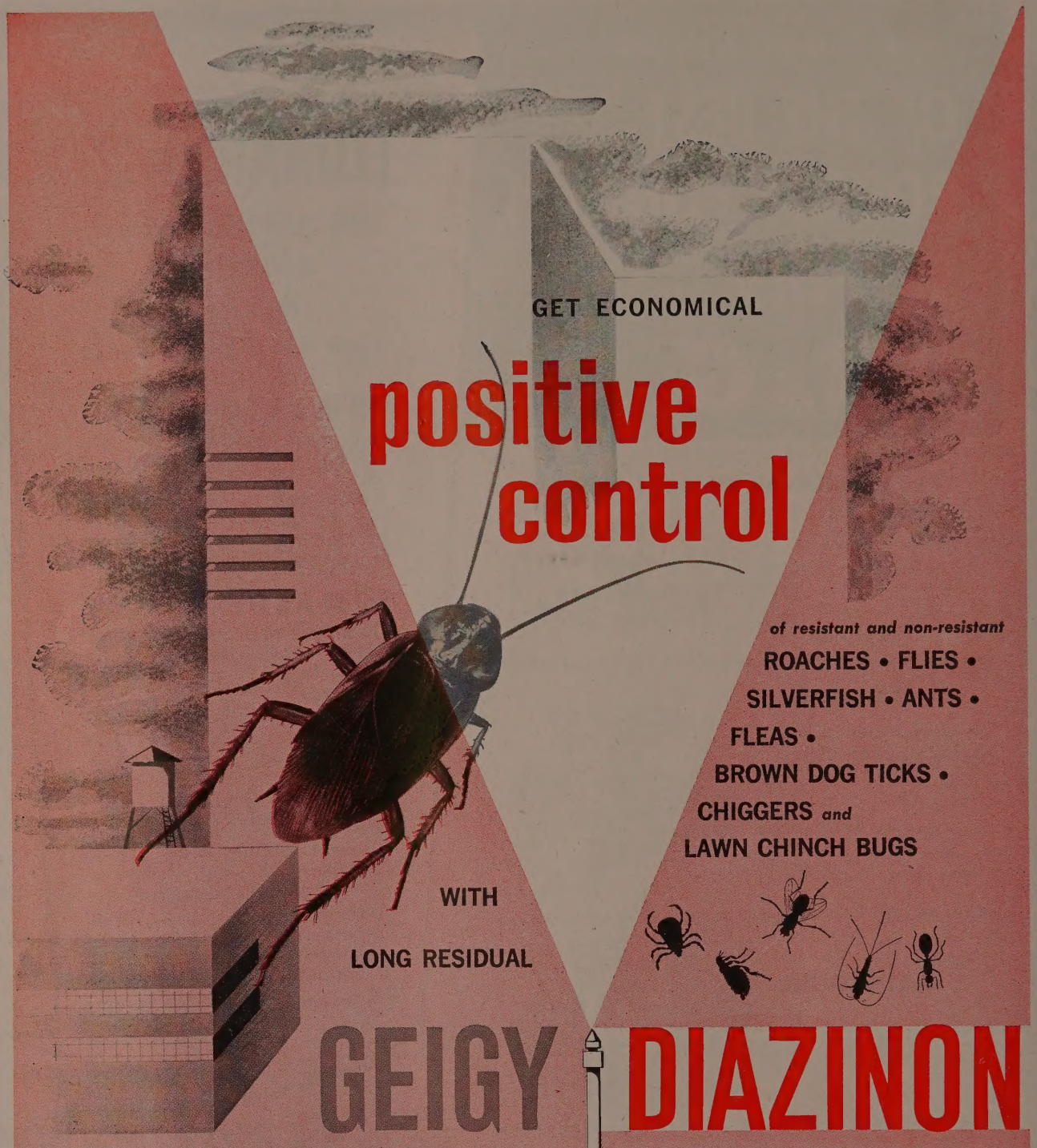

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In Charge, Entomology Research Division
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Orlando, Florida

Part One: *Bedbugs*

BEDBUGS AND HUMAN LICE are of interest to the pest control operator as parasitic insects in which insecticide resistance is becoming an increasingly important problem. Although they can still be controlled with DDT in most localities, the number of reports of encounters with resistant strains continues to grow, and the need for alternate control measures is constantly becoming more apparent. This two-part article presents a brief review of their biology and measures now approved for their control, together with comments on insecticides that may be employed against them in the future. Part One covers bedbugs, and in Part Two next month we'll discuss human lice.

Only one species of bedbug, **Cimex lectularius** L., is found in most parts of the United States. A second species, **C. hemipterus** Fab., occurs in Florida and perhaps in some other southern states. The two species are almost identical in appearance as well as behavior, but **hemipterus** may be recognized by the absence of winglike expansions of the pronotum that are characteristic of adult **lectularius.**

Life Cycle

Mature bugs are brown, wingless insects about ¼ to 3/8 inch long when unfed. When engorged, the body becomes greatly distended with blood, and color changes to dull red. The female lives 2 to 10 months under normal conditions, and lays about 200 eggs. Where hosts are present and bugs can feed regularly, eggs are laid at the rate of three or four a day for about two months. Largest numbers are laid when the temperature is above 70° F., and none below 50°.

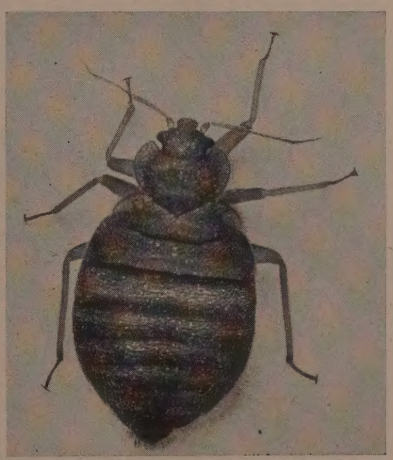
Eggs are white and about 1/32 inch long. They are coated with an adhesive, which quickly dries, fastening them to the surface on which they were deposited. The incubation period varies with the temperature; hatching may occur in six days at high temperatures or require as long as 28 days at lower temperatures. Extremely low temperatures will prevent hatching.

Newly hatched bugs, or nymphs, are similar to adults in shape, but are translucent and nearly colorless. They seek a blood meal at the first opportunity. As they grow they molt, and after each molt they are at first pale, then become brownish. They usually feed once between molts; immediately after feeding, bodies are blood red. They molt five times before reaching maturity. In warm weather or in heated buildings, complete nymphal development requires four to six weeks, and four or more generations may be completed in a year.

In warm weather newly hatched nymphs may live without feeding for several weeks, and older bugs can survive for several months. Bedbugs have been reported to live a year or more without food under some conditions.

Habits

Although beds are usually centers of infestation, the bugs may be found behind woodwork, beneath loose wallpaper, under hangings, or in cracks and crevices. They also infest other furniture, such as chairs and sofas in homes and seats in theaters, public vehicles, and stations. Feeding usually occurs at night, but if hungry, the bugs will feed during the day. Bugs infesting chairs in



Bedbug: Cimex lectularius L. Photo, courtesy of the U. S. Department of Agriculture.

homes or seats in buses or stations are especially likely to feed in the daytime, since hosts are not present throughout the night.

Bedbugs may be serious pests in poultry houses or in places where rabbits, guinea pigs, or other animals are raised. They may also feed on small animals or birds kept as pets in the home. Such small animals may be seriously weakened by loss of blood if infestations are heavy.

Bedbug bites may be painless when inflicted, but the fluid injected to facilitate feeding normally causes skin to become irritated and inflamed. Welts often develop, itching may be intense, and if scratched excessively bites may become infected. Bedbugs have not been proved to be carriers of disease, but a succession of disturbed nights in the presence of a severe infestation has a debilitating effect.

An infestation of bedbugs may be indicated by a pervasive disagreeable odor, or by minute blood stains or fecal spots on bedding, furniture, or wallpaper. If these signs are present, a little search will disclose hidden bugs.

Control

Control of bedbugs consists in searching out all their hiding places and treating them with an insecticide. A residual insecticide is better than one that kills only by direct contact with the spray.

Since beds are usually infested, frames, springs, legs, and all cracks and crevices should be sprayed. A light mist should be applied to the entire mattress, and heavier treatment to seams, tufts, and folds. The mattress should be dried and aired before using.

Infested furniture, which may be found in other rooms as well as the bedroom, should be treated in a manner similar to beds, with particular attention to cracks, crevices, seams, and folds.

In well-established infestations it will probably be necessary to apply insecticides behind baseboards, window and door casings, pictures and picture moldings, and loosened wallpaper, and in cracks in plaster. Partitions made of composition board or sheathing may contain many cracks in which bedbugs can hide.

The insecticide may be applied in kerosene solutions, water emulsions or suspensions, or dusts. Where visible residues are undesirable, solutions or emulsions will be preferred, whereas suspensions may be more suitable on clay or concrete surfaces such as those in adobe dwellings or animal shelters. Dusts may be used to reach some infestations difficult to reach with sprays. Liquid formulations should be applied as wet sprays, not as mists or aerosols.

Most Effective Chemicals

DDT, malathion, lindane, and pyrethrum are the most effective insecticides approved for use against bedbugs in human habitations. DDT is generally the most satisfactory, unless the bugs have developed resistance to this insecticide, since it has a long residual action and will kill newly emerged or introduced bugs for several months after application. A single treatment usually eliminates the infestation. Solutions or emulsions should contain 5% of DDT; suspensions, 2.5%.

Malathion is also highly effective and, in laboratory tests, has shown a residual action comparable to that of DDT. It is more odorous than DDT, but is effective against bugs that have de-

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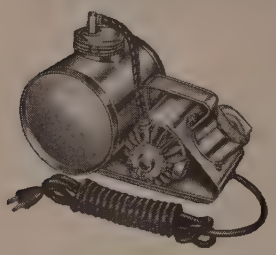

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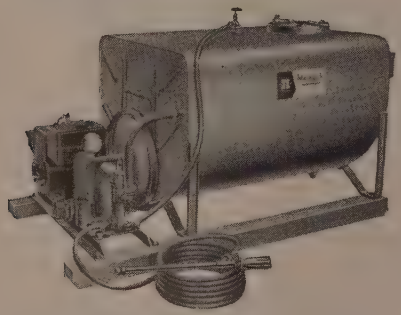

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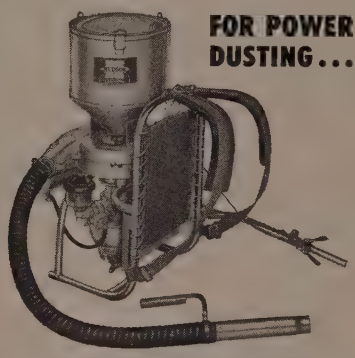

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veloped resistance to DDT or lindane. It has been cleared for use as a 1% spray. Only light applications of this formulation should be made to mattresses, and thorough airing before covering them with bedding assists in rapid dissipation of the odor. A single thorough application will control the infestation.

Lindane gives control when freshly applied, but has less residual action than DDT or malathion. It may be satisfactory against DDT-resistant strains, but as noted above some strains are also resistant to lindane. Two concentrations of lindane are required in controlling bedbugs in homes and public sleeping quarters—0.1% for beds and 0.5% for baseboards, cracks, and other hiding places. Mattresses should be lightly treated and aired. More than one application may be required.

Pyrethrum is effective when freshly applied, but rarely shows enough residual action to kill all bugs that hatch later. Several treatments two to six weeks apart may be necessary. Sprays should contain at least 0.2% pyrethrins and 1% to 2% synergist, such as piperonyl butoxide or sulfoxide.

Strains of bedbugs from various parts of the world have shown resistance to DDT, and some strains are also resistant to lindane. DDT resistance is apparently not widespread in the United States, and lindane resistance has not been demonstrated here. However, our experience with resistance in other species has taught us to be prepared for increasing difficulty in the control of this species. Attention has therefore been given to the organophosphorus insecticides as alternative treatments. Malathion, Diazinon, dicapthon, Dow ET-57 (Korlan), and Dipterex have given satisfactory control under experimental conditions, but only malathion has as yet been approved for use in homes.

(Part Two next month will describe physical characteristics of human lice, life cycles, and their control. — **Ed.**)

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Orlando, Fla., Laboratory, Entomology Research Branch, ARS. 1955. Insecticides and repellents for the control of insects of medical importance to the armed forces. U. S. Dept. Agr. Circ. 977, 91 pp.

Division of Insects Affecting Man and Animals, Bureau of Entomology and Plant Quarantine. 1953. Bedbugs. Leaflet 337, 8 pp.

(Advertisement)

Harder Extermination Service reports on new chemical... Dicapthon... new techniques for

residual control of resistant roaches

by Stanley Stainton, Supt. of Service—Harder Extermination Service, Hempstead, N. Y.

When German roaches became resistant to chlorinated insecticides, we faced the immediate problem of finding effective new materials. We didn't realize it at first but we had *another* problem: because the living habits of resistant roaches differ from the non-resistant species, new application techniques were needed.

New Insecticides: The first thing we did was to switch to phosphate insecticides. We've used several. While they do give kill, the older phosphates give control for periods of only a week or less. We are now using the new insecticide Dicapthon and have found it by far the best resistant roach killer to date. In the first place, it is giving at least 3 to 4 weeks' residual control... even of heavy infestations. That's particularly important to our clients because more than twice a-month service would be uneconomical for most of them. And, with long-term control, our crew can take on more jobs in a given period.

Reinfestation: Residual control is important in situations where reinfestation occurs frequently. In supermarkets and restaurants, cases come in from infested warehouses almost daily. Again, Dicapthon's residual control is doing the job no matter what the surface treated.

New living habits: We always start from the premise that application must be thorough, whatever material we use. But when the German roach became resistant, we were not getting control (at first) even with the most careful and thorough applications. We then found that resistant roaches had moved off floors, out from behind exposed pipes, compressors, crates, etc., into the space between the floor and the ceiling below. We are now applying Dicapthon in these interspaces (see picture). This technique, plus thorough application in all the conventional areas with this material, has given us the residual control we're looking for.

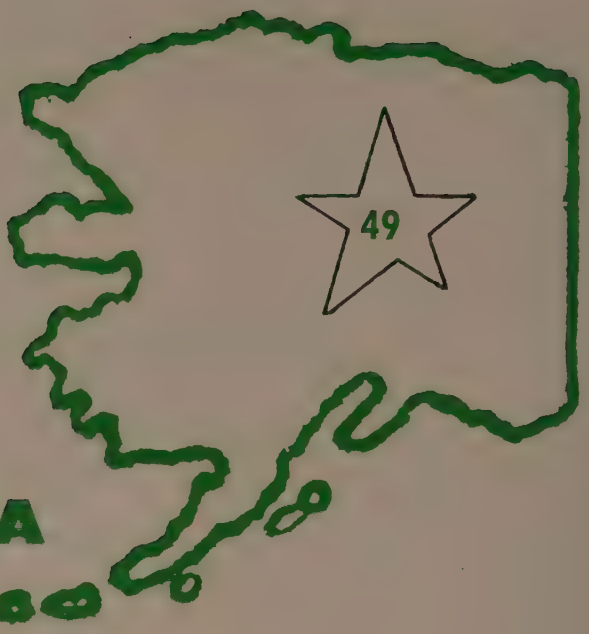
Above Thorough application in all the usual places is prerequisite for successful control of resistant German roaches. Here, under-counter pipe area is sprayed. **Below** Control of resistant roaches calls for treatment of ceiling-floor interspace in which these roaches nest. Basement ceiling has been opened to give entry.

Speed of kill: Where infestations are extremely heavy and where the client wants to see *immediate* knockdown, we add pyrethrins to the spray. However, Dicapthon will do just as complete a job alone as with pyrethrins added. It will also work on *all* surfaces, including glass and metal.

Dicapthon-availability: Dicapthon is a development of American Cyanamid Company. It manufactures and sells only technical material. Dicapthon formulations for professional pest control are offered by a number of companies under their own brand names. Ask your regular supplier for the brands he carries. American Cyanamid Company, Insecticide Department, 30 Rockefeller Plaza, N. Y. 20, N. Y.

CYANAMID

by **ALFRED BAKER**
Sanitation Section
Alaska Department of Health
Ketchikan, Alaska



ALASKA Puts the Heat on BEDBUGS

IN ALASKA the problem of insect pest control is not one of continuing importance except in areas where mosquitoes, gnats, and black flies may be troublesome during summer. It was surprising, therefore, when early last year, the owner of a large apartment house in Southeastern Alaska called the Sanitation Section of the Alaska Department of Health to say he was very concerned about an infestation of bedbugs. The writer who had not seen a bedbug for 20 years had to consult one of his reference books to see what they looked like before visiting the building.

Brought in by Easterners

The building is 11 stories high, fireproof, with radiant heating, and contains 120 living units. Investigation revealed a family had come from a large eastern city several weeks earlier, bringing their household possessions with them. There were four children in the family, hence many articles of clothing, bedding, and mattresses. This family had been placed in a living unit on the third floor to await availability of another unit where the view was more agreeable. After two weeks the family moved from this rear apartment (designated as No. 1) to another (No. 2). Two weeks later another family, now occupying No. 1, complained their children had been bitten by bugs, which later proved to be **Cimex lectularius.**

It was noted the children from the East seemed pale and anemic. There were no welts visible on their arms but many small marks, perhaps evidence of immunity to bedbug toxin. The other children bitten had large red welts on their skin.

It was at this point that the Alaska Department of Health Sanitation Section entered the scene. Investigation of apartment No. 1 revealed two old and soiled spring-filled mattresses heavily infested; and a new settee, property of the apartment house, was loaded with the insects. It was immediately decided control measures could not be effective while the families continued living in Nos. 1 and 2. They were advised to launder and dry clean their clothes and bedding prior to moving. The family in No. 1 was placed in another unit of the building; the family occupying No. 2 was evicted and moved to another building. Both families took only necessary clothing and utensils, which were presumably disinfected. All other possessions were considered contaminated and held for insecticidal treatment.

Floors in the living units were covered with asphalt tile, which is readily soluble in petroleum products. Therefore, we decided against using kerosene or other solvents in poisons contemplated. A quantity of 10% DDT powder was secured and both apartments thoroughly treated. This thorough dusting included forcing the powder into cracks and crevices with blow guns. Openings were made in the mattresses and powder forced inside. Doorways were stopped up with towels and rags containing liberal quantities of DDT powder. Three days later investigation proved there were as many live bedbugs as ever.

Establishes DDT Resistance

The writer then placed six live bedbugs in a bottle where they were forced to crawl in DDT powder. Four of them were still alive after 48 hours. This meant, of course, we were up against a DDT-resistant strain of **Cimex.** DDT has been used for years on the eastern seaboard.

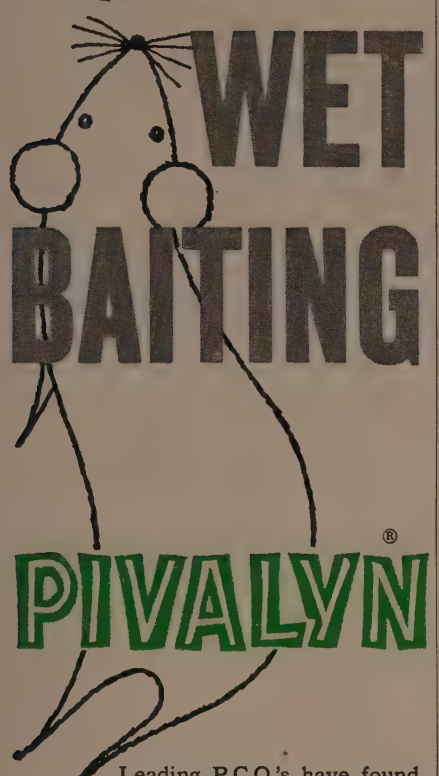
The only other effective poison immediately available was pyrethrins-in-oil. It destroyed bedbugs on direct contact after about one minute of thorough "soaking" with a sprayer, but residual effects were nil. This formulation was also damaging to the floors, we found.

Meanwhile, we still continued to find live bedbugs not only in the two original living units but in three additional ones. Plumbing was not tight in places where it passed through walls and floors, and bugs were migrating into other apartments via the pipes. Efforts were immediately made to seal areas around the pipes with plastic wood. By this time and after much difficulty, we were able to secure chlordane, 70% concentrate, water soluble. We applied it by power sprayer at 5% concentration. This was effective on contact, but occasional bedbugs still appeared. It was finally necessary to burn the two mattresses originally brought into the apartment house by the Easterners.

In order to protect the owner, we kept the outbreak as secret as possible, but by word of mouth the story soon spread rapidly. Some families moved out and others feared to seek rentals here. The situation thus became a bankruptcy threat to the apartment owner. The building must be completely rid of insects or other renters would leave.

On consulting **Medical Ento-**

FOR WET BAITING



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mology by Riley and Johannsen* we found that **Cimex** can be destroyed by bringing the temperature up to 140° F. This superheating treatment will destroy eggs, nymphs, and adults. In order to be certain the building would be absolutely free of the pests, it was decided to embark upon this drastic method.

Large electric heaters were brought in, special wiring installed through windows from outdoor lines to accommodate the heaters, and the temperature raised to between 150° and 160° progressively in each infested room. The electric utilities men were most cooperative. The high temperature was maintained from six to eight hours. Furniture checked and split from the heat, wall finishes peeled off, and in some places the asphalt tile curled; but when this process was completed no bedbugs were seen in the heat-treated apartments.

Second Report of Bedbugs

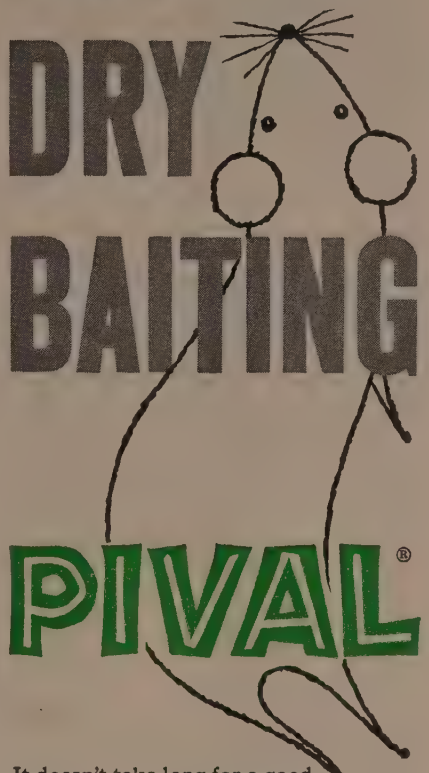
Ten months later the writer was again called by the owner of the apartment house who stated that tenants had discovered bedbugs in two apartments on the eighth floor. It was learned one family had been friendly with the original "importers," and it was surmised the insects were carried in neighborly visitation from the first point of infestation. The adjoining apartment on the eighth floor was occupied by a bachelor originally from Asia but who had lived several years in New York City. We could not determine if a secondary infestation had occurred. It was, however, immediately assumed the bugs were DDT-resistant.

A discussion was held regarding treatment that we would use. After inspecting Apartment No. 2 and noting damage to asphalt tile, walls, and furniture from oil insecticidal sprays (1/10th% lindane and pyrethrins-in-oil), it was decided the heat treatment, while expensive, was less damaging than oil sprays. Heavy duty electric heaters were mounted on a hand truck and each room was brought to a temperature of 150° F. for six hours. Clothing and bedding were either laundered, dry cleaned, or placed in an automatic drier for one hour. Water-soluble chlordane,

(Continued on page 34)

*Riley, William A. and Oskar A. Johannsen, 1938, Medical Entomology, pp. 156-157.

FOR DRY BAITING



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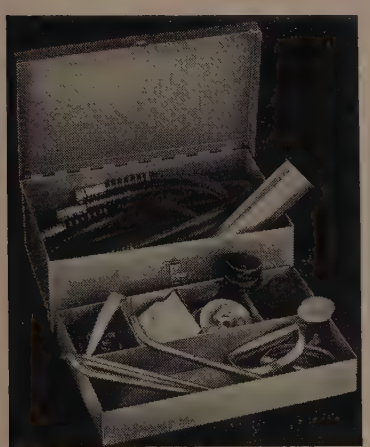

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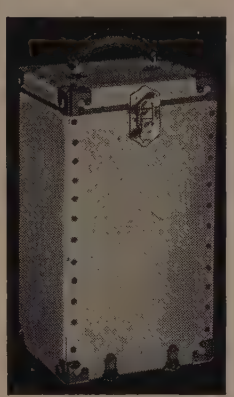

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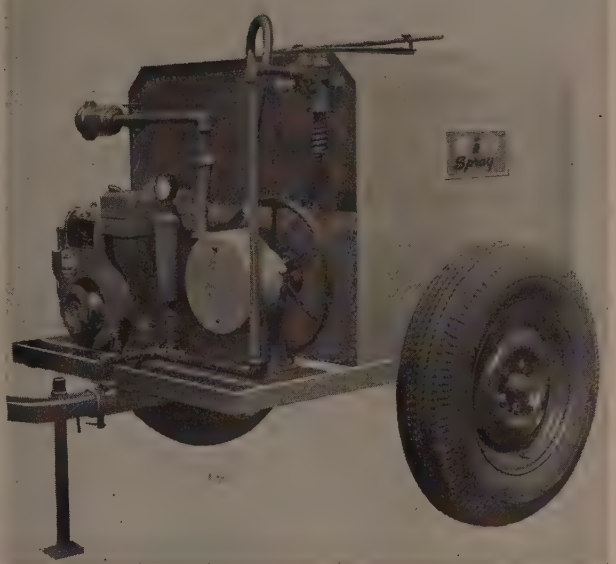

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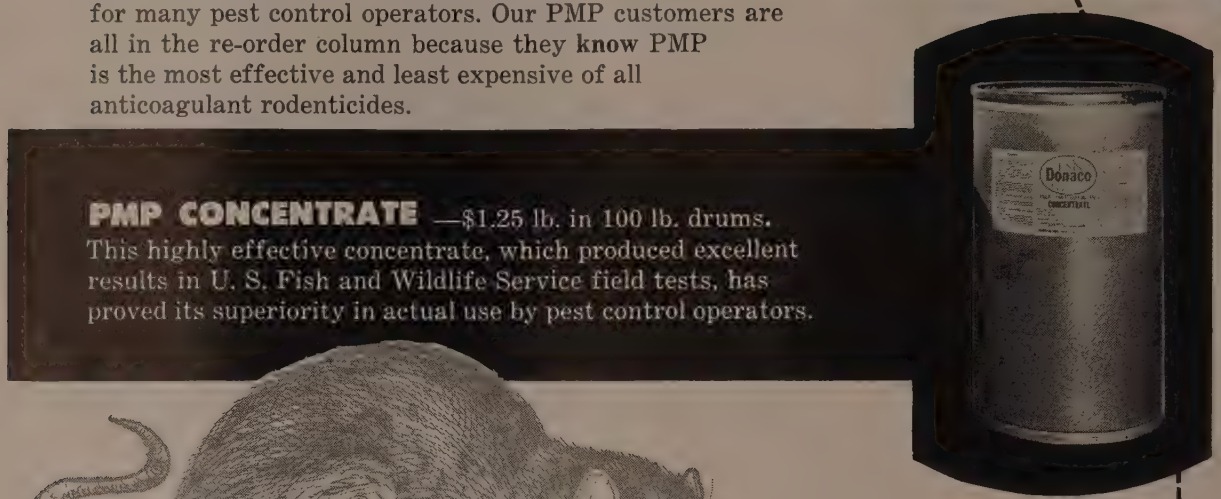

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Convention Report:

Purdue's Osmun Tells NPCA Meeting Last Month
He sees PCO Specialists Pooling Resources
to Establish Local

Multiple-Services PCO "Clinics"

The growth and diversity of pest control markets in the next 25 years will bring with it a new concept in service management—the pest control "clinic," with companies departmentalized according to specialties. When volume warrants, these clinics will offer general pest control, fly and mosquito control, termite control, preventive entomology, lawn and garden insect control, rodent control, bird control, perhaps agricultural pest control, and food plant sanitation.

"To a degree, this is done by some companies now," Dr. John V. Osmun, head of Purdue University's Department of Entomology, told National Pest Control Association members at their 25th Annual Convention last month, "but eventually the clinic will be a feature of many more companies to attract public recognition, increase customer confidence in a concern, and lend general technical competence to the organization."

Held in Washington, D.C.'s Hotel Statler-Hilton October 19-23, the Silver Jubilee meeting drew a record 750-plus to the nation's capital, site of the NPCA's charter session 25 years ago. Talks ranged from business management to insect and animal control. Dr. Osmun's presentation was part of the early program dealing with the National's history and what the future holds for the industry.

"Today, many firms have sanitation work developed to a high degree and the next few years will find it common practice in most companies either to pursue it alone or in national cooperation with other firms," Dr. Osmun continued.

"One of the greatest increases in business, however, will come in the area of insect control for suburban developments. Larger acreages and habitable woodlands are too much for most homeowners to handle. They will require lawn and garden insect control, protection against small animals and birds, weed abatement, and relief from mosquitoes, flies, and chiggers."

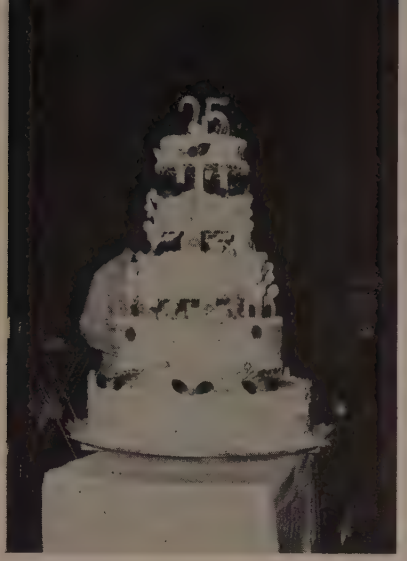
Other predictions for the next 25 years? Lee E. Chambers, Aldridge & Chambers, Inc., Virginia Beach, Va., had plenty: elimination of cut-rate pricing; pre-treatment certification for termite operators; and professional classification of termite operators and PCOs as specialists, such as doctors, lawyers, etc. are classified today.

The country's population increase alone should account for a leap in business during the next quarter century, according to Stanley McKenzie, McKenzie Pest Control, Lake Charles, La. More people and more homes mean more pest problems.

Robert Yeager, Rose Exterminator Co., Cincinnati, O., explored more fully the space-age concept of pest control that operators might anticipate.

"We can expect," Yeager observed, "considerably more automation in the form of conveyor systems and other labor-saving devices, and although much effort is going into simplicity of design to facilitate more sanitary conditions, it certainly looks as though there will be no reduction in the number of places in which pests will hide and breed."

Besides predicting industry's future on Monday's session, Purdue's entomology chief, Dr. John V. Osmun MC'd the Silver Anniversary banquet. He introduced over 60 guests with such humor and deftness that none of the 600 diners became restless or realized such an experience could be so entertaining.



No birthday party is complete without a cake and here's the one wheeled in before dessert was served at the NPCA's convention banquet.

Problems Facing Industry

But to achieve progress in the future, problems of the present will have to be ironed out. David E. Anderson, Evans Laboratories, Inc., Little Rock, Ark., drew attention to price-cutting and haggling among competitors as the biggest industry headache, and suggested operators thoughtfully appraise their own business practices before attacking policies of their competitor.

Charles C. Delk, Delk Pest Control, Fresno, Calif., told delegates one of the most pressing problems facing the industry — at least in California—has been the lack of a uniform termite inspection report. He described the preparation of California's new "Uniform Structural Pest Control Report," yet to be approved by the state's regulatory body. This report is designed chiefly to standardize inspection procedure for termite "clearances" on real estate.

Then and Now

Rounding out the "25 Years of Progress" anniversary theme was a review of the industry from 1933 to 1958 by J. Edwin Sameth, of Western Exterminating Co., Newark, N. J., a past NPCA president (1950-51). Sameth enumerated year-by-year events which led to the gradual emergence of professional pest control as a highly specialized industry offering such services as sanitary inspection, laboratory analysis, termite control, finished product inspection, weed control, ornamental pest control, and retail sale of products.

"Success of the industry has come about largely through the diligence of its members in advancing the technical and business levels of our profession,

Industry's past, present, future were covered by, left to right, PCOs J. Edwin Sameth, Charles D. Cushing, who presided over this part of the program, Stanley McKenzie, Robert C. Yeager, and Purdue's Dr. John Osmun.

and through an ever-expanding recognition of the importance of public relations," Sameth declared.

Public Relations Spur

The value of public relations was endorsed strongly by A. H. Bender of Bender Termite Control Co., Washington, D.C., a co-chairman of the local convention committee.

Bender said his company's customer relations program hinges on two rules: first, his crews spare no effort in doing the best job they can; second, when they leave a customer's cellar or basement, the property is cleaner than when they went in.

"Ninety-nine of 100 customers have no way to judge how competent or conscientious we are in performing our task," Bender said. "But the one thing the customer is able to judge is the neatness and workmanlike way our men go about their job."

William E. Graf of Vogel-Ritt, Inc., Philadelphia, Pa., set three criteria for a good public and customer relations program at the serviceman level: careful selection, training, and supervision of personnel.

"Aside from conscientious supervision, we stress written reports and records as part of overall supervision," Graf said. "We require each man to keep a daily log of his calls, including time in and time out on the call, no matter what it may be. Every member of our supervisory force, right up to our president, Mr. A. E. Ritt, has flagged down our trucks and asked on the spot, to see the daily log."

Graf said the log is useful as a cost accounting tool for analyzing time and work, but its main purpose is to guarantee scheduled service calls are made when they are supposed to be and that ample time is spent on the job.

The Association's leadership in industry promotion and the public relations value of the NPCA's Serviceman's Manual were cited by Louis N. Wilson, secretary and director of information of the National Plant Food Institute, Washington, D.C.

NPCA plans for a public relations program were announced to members by Dr. Ralph E. Heal, association executive secretary, and described in detail by John McDonald, a member of the New Jersey Editorial Service, NPCA public relations consultants.

Scheduled as part of the NPCA's member service, the program is directed to make service personnel better P-R representatives of their companies. It will use professionally-prepared cartoon posters promoting proper and safe use of tools, grounding of tools, cleaning up on the job, etc.

Abe Weinstein, Harris & Weinstein Associates, Atlanta, Ga., reiterated the need for an NPCA-directed public relations program to stimulate public confidence and "pre-sell" the integrity and quality of recognized, associated PCOs.

PCO Ads Pay Off

In the advertising end of promotion, Weinstein reported that an Association-sponsored survey revealed operators usually adopt a "light, whimsical" theme in their advertisements and often use a trademark such as Otto the Orkin Man, Inspector Getz, both creations of Weinstein. Advertising is apparently paying off but personal selling remains one of the operator's best methods for getting new business.

Aids for Better Selling

When it comes to selling, James Steckel, Tornado Manufacturing Co., Columbus, O., listed seven sources for ideas and training: sales clinics in the community, professional sales organizations, sales executive clubs, books and periodicals, Dale Carnegie courses, films, and toastmasters' clubs and other speaking organizations.

When a new prospective customer telephones the PCO, the selling job begins not with the PCO but with the receptionist who takes the call, since her telephone courtesy will play a large part in forming the customer's first impression of the company. That's why Steckel recommended PCOs have their telephone receptionists specially trained to answer the phone. Telephone company service representatives will do this without charge, he says.

Cost-Cutting, Accounting

Almost as important as a knowledge of sales in business is a knowledge of costs. F. Peter Clements, Clement's Services, Ft. Lauderdale, Fla., stressed that costs can't be cut by the operator unless he weeds out the weaknesses in his business, such as unprofitable service calls, wasteful labor, and duplication of effort.

Another major consideration, in terms of cost, is the surplus, according to Clements.

"Stop spending the surplus," Clements recommended. "I know of three businessmen that failed this year because they bled their companies by not watching overhead costs, but instead spent the surplus and wiped out their reserves. Then when the need came for a little cushion to fall back on, it just wasn't there. Surplus is necessary for working capital."

A recommendation for an Association uniform account classification program in which all members would use the same accounting principles for comparative cost analysis was proposed by Statistics Committee chairman, Fred New, Ragan Exterminators, Inc., Kansas City, Mo.

Current industry problems — price-cutting, unethical advertising, need for more public recognition — are far from insurmountable, these speakers said: (left to right) David E. Anderson, Charles Delk, and Lee Chambers.

New stressed the importance of a uniform classification of accounts and proposed a specific breakdown of expense items for the membership's consideration, patterned on similar programs used by other large industry trade groups. He hopes to have the system operative by January 1 so statistics can be compiled in time for the Association's 1959 convention.

Kenneth Weiser of M. R. Weiser & Co., New York, N.Y., certified public accountants working with the Association on the proposed uniform account classifi-

cation, said proper classification of accounts will provide sufficient expense breakdown so troublesome expenses can be pinpointed.

"Perhaps when this uniform account classification program is operating, we will find the standard serviceman's payroll percentage, among successful operators, is 30% of sales," Weiser said. "If an operator using this accounting system finds his serviceman's payroll percentage is 35%, he has a basis for examining his operations."

Business Wrap-Up

A broad discussion of planning a pest control business was provided by William Spitz, Big State Exterminating Co., Houston, Tex.

On advertising, remarked Spitz: "Like any other phase of our business, advertising must be planned well in advance. The PCO should plan for an entire year ahead with a man who knows more about advertising than he, the operator."

On price-cutting: "It isn't easy to maintain higher prices when competitors claim they can do the same job for half or one third your price. But with a little effort, a little salesmanship, and a lot of good service work, you can get more for your work than your low-level competitors."

On new markets: "For slow seasons, figure out some phase of pest control that can fill in when equipment is idle. But before an operator gets into a new pest control service, he should be certain it will not conflict seriously with other operations of his company. Investigate before you invest in any new operation. Chemical companies will send sample materials to test. And by testing a chemical in his own equipment, the operator has a better idea of results he can expect."

Vote For Pretreat Certification

A convention development that should have a strong effect on business, at least on Association members doing termite work, came about with the establishment of The NPCA Board of Certification for Preconstruction Termite Treatment, voted on by the members at an early business meeting.

Bylaws of the new program, which was created to certify or guarantee termite pretreatment work of its members, will be drawn up by the seven members of the Pretreatment Board and

Technical papers reviewed new research on insecticides and rodenticides, as well as experimental control concepts PCOs may be using in the future. Speaking on these topics were, left to right: (**top**) Earl Seybert, Clayton Wright, J. M. Magner, Dr. Robert Norton, and Dr. I. Barry Tarshis; (**center**) NPCA's Dr. Philip J. Spear, who presided at the session, Dr. Clarence Hoffman, and Hamilton Laudani; (**Bottom**) Dr. James M. Grayson, William J. Turrie, Dr. Harlan Shuyler, and William Elo.

submitted to the NPCA's Board of Directors for approval. Representing the termite control industry on the Board are Myron W. Smith, Hill-Smith Systems, Memphis, Tenn.; Wilfred Gunn, Hollywood Termite Control, Los Angeles, Calif.; Paul K. Adams, Adams Pest Control, Alexandria, La.; and Dr. Lee C. Truman, Pest Control Services, Inc., Indianapolis, Ind. Three other representatives of allied professional groups, as yet unnamed by the NPCA Board of Directors, will serve on the Board with the four NPCA members.

Soil pretreatment for termites, as well as other termite protection techniques recognized in the Federal Housing Administration's new revised Minimum Property Standards, were reviewed by W. Beverley Mason, Jr., assistant commissioner of technical standards for FHA. Mason said the new MPSs will be available from FHA offices sometime this month and will go into effect early in 1959. A full report of his talk will appear in December PC.

Present, Future Insect Control

On the technical segment of the program, Dr. Clarence H. Hoffman, assistant director of the Entomology Research Division, U.S. Department of Agriculture, Washington, D.C., described current and future insect control research.

"When allethrin was synthesized," Dr. Hoffman said, "the entomologists' dream for a synthetic pyrethrum was partially realized, since pyrethrins and allethrin are both esters of chrysanthemumic acid. Both are synergized by certain materials, such as piperonyl butoxide, but unfortunately both have relatively short residual life.

"Recently we directed our attention in the Division toward other esters of chrysanthemumic acid, which eventually may be manufactured more cheaply than allethrin. Their toxicity to warm-blooded animals is comparably low, but their most important characteristic is that they have a longer residual effectiveness than allethrin or pyrethrin against a wide range of insect pests."

Dr. Hoffman said one of these esters — 6-chloropiperonyl chrysanthemumate, known as barthrin —has shown up well in laboratory tests against larvae of common malaria and salt-marsh mosquitoes, body lice, American cockroaches, and several other insects.

A new experimental concept that has actually proven itself in the field, however, is the process of sterilizing laboratory-reared male insects by radiation and then releasing them in infested areas, where they will compete with normal males of the same species in mating. This control technique was used in Florida last year, he said, to help eliminate a heavy screw-worm infestation.

Interest Beamed At Silica Dusts

Of particular interest to operators were Dr. Hoffman's com-

Seated at the speakers table during the NPCA's Silver Jubilee Convention banquet were, left to right, William E. Roll, American Disinfectant Co., local convention co-chairman; Mrs. A. H. Bender; Mrs. J. J. Davis; Dr. Ralph E. Heal, NPCA executive secretary; Mrs. J. C. Redd; Dr. R. H. Nelson, executive secretary, Entomological Society of America, Washington, D. C.; Mrs. Ralph E. Heal; Noble E. Buell, Chief of the Branch of Predator and Rodent Control, U. S. Department of Interior, Washington, D. C.; Mrs. Wesley Gilbertson; Dr. Edward F. Knipling, Director of the Entomology Research Division, Agricultural Research Service, Beltsville, Md.; Mrs. George P. Larrick; Harold Schnorrenberg, Dead Shot Chemical Co., Oklahoma City, Okla., 1958-59 NPCA executive vice president; Mrs. Wayne K. Davis; Herman L. Fellton, Getz Exterminators, Inc., St. Louis, Mo., 1958 national convention chairman; J. R. Pat Gorman, Crown Manufacturers Institute, banquet speaker; Dr. John V. Osmun, head,

ments on the use of silica dusts, which are said to kill insects by desiccation. Some researchers feel desiccants may be the future answer to roach resistance.

"In tests we conducted in homes during 1955," Dr. Hoffman reported, "the dusts at that time were objectionable because they drifted around the house, and control of roaches was so poor after three weeks that the houses had to be sprayed with an insecticide.

"It would seem probable that some of the objectionable qualities of silica gels might be overcome by mixing them with such inert materials as pyrophyllite or talc, although it is not yet known what effect this may have on the insecticidal value. However, these dusts warrant intensive research."

Roach control tests with SG-67, a treated silica aerogel manufactured by Davison Chemical Co., Baltimore, Md., were conducted in the field by the NPCA's Insecticide Committee. Results were given at the convention.

Committee member, Clayton Wright of C. Wright Associates, Dallas, Tex., said seven to 14 days after application of the dust in 38 apartment houses, in seven homes, and three commercial establishments, dead roaches were observed, but satisfactory control was not achieved on any of the jobs.

"An average of 5 ounces of SG-67 was used per house," he indicated, "until tests were discontinued because of customer and serviceman dissatisfaction."

In similar committee tests on 11 other establishments 14 to 45 days after application, five operators reported live roaches, six had satisfactory control. An average of 10 ounces of SG-67 was used per house, Wright said. Satisfactory control was reported with the chemical on seven bedbug jobs, two yard applications for cat fleas, one silverfish call, and one bee job.

"The material is hard to control since it is light, its white color makes it very noticeable, and there are reports it can cause irritation to servicemen," Wright concluded.

"The recommendation for this material now stands at ½ to 1 pound of dust for an apartment or house and 1 to 2 pounds in a commercial establishment."

Dr. I. Barry Tarshis, Department of Entomology, University of California, Los Angeles, said SG-67 and a silica gel called SG-77 proved to be two of the most outstanding compounds, among non-toxic sorptive dusts, recently evaluated in UCLA field and laboratory tests conducted by Drs. Tarshis and Walter Ebeling, and Mr. Robert E. Wagner.

"The UCLA experiments," Dr. Tarshis remarked, "demonstrated that certain fine dusts will kill insects by adsorbing the wax and/or oil that covers their bodies and normally prevents loss of vital body moisture. Deprived of this coating, the insects literally dry to death."

According to Dr. Tarshis, field studies proved these compounds effective for control of German, brown - banded, and Oriental roaches in homes and other establishments; for control of dog and cat fleas on animals and in their shelters; for prevention of drywood termites in enclosed structures, such as attics of homes; and for eradication of honey bee or wasp colonies in attics and walls of homes. Laboratory studies have also shown these compounds can kill American roaches; bedbugs; flies; rodent fleas; chicken, rat, and rose-bush mites; dog ticks; bees; wasps; ants; vinegar flies; moths; grasshoppers; chicken lice; greenhouse thrips; spiders; scorpions; and sow and pill bugs.

"For the control of German, Oriental, and brown - banded roaches," Dr. Tarshis reported, "½- to ¾- pound of SG-67 and SG-77 in homes and apartments and from 1 to 2 pounds in commercial establishments is recommended. The dust should be applied with a small bellows duster, such as a Getz blower, or a hand duster, such as the Hudson Admiral Duster #766, under refrigerators, stoves, washers, dryers, sinks, in and behind cabinets, in walls, and in other out-of-the-way places ordinarily frequented by cockroaches.

"It is essential to leave the dust in treated areas until all cockroaches disappear. In concealed places it is advised that the dust be left permanently. In severe cockroach infestations, an additional pound of dust per 1,000 square feet of floor space should be blown into the attic and subfloor space, through crawl holes, to all parts of these areas with an electric, or other suitable type of duster. In homes treated for cockroaches, owners frequently reported either a reduction in numbers or elimination of ants also. The dust will kill ants if they contact it."

For the control of dog and cat fleas, Dr. Tarshis said 1 to 2 ounces of either SG-67 or SG-77 should be dusted into fur of the animals, and over the entire body. For cats and short-haired or clipped dogs, one treatment per infestation is sufficient. Two treatments are necessary on long-haired dogs. Dog and cat shelters, boxes or baskets, and bedding should be thoroughly dusted when the animals are dusted.

For prevention of drywood termite infestations, use of SG-67 was recommended by Dr. Tarshis at the rate of 1 pound to 1,000 square feet of attic area. He said it may be applied with an electric blower inserted in the attic crawl hole.

In laboratory tests by the Crop Protection Institute, Durham, N. H., SG-67 has been found "significantly toxic" to German roaches.

"By vacuum duster techniques," the Institute's Director, Dr. Robert J. Norton said, "an application equivalent to about 4 ounces per 1,000 square feet effected practically 100% control in 24 hours."

Depcrtment of Entomology, Purdue University, toastmaster; Wayne K. Davis, Ailing House Termite Inspection Bureau, Oakland, Calif., 1958-59 NPCA president; A. H. Bender, Bender Termite Control Co., local convention co-chairman; Mrs. Helen Buettner, widow of the late William Buettner, the NPCA's first president; J. C. Redd, Redd Pest Control, Jackson, Miss., NPCA 1957-58 president; Mrs. Harold Schnorrenberg; George P. Larrick, Commissioner, Food and Drug Administration, Washington, D. C.; Mrs. Herman L. Fellton; Wesley Gilbertson, Deputy Chief, Sanitary Engineering, U. S. Public Health Service, Atlanta, Ga.; Mrs. Noble E. Buell; M. R. Clarkson, Deputy Administrator, Regulatory Section, Agricultural Research Service, Washington, D. C.; Mrs. Edward F. Knipling; Charles Houghton, Safety Fumigant Co., Boston, Mass., 1958-59 NPCA secretary-treasurer; Professor Emeritus J. J. Davis, Department of Entomology, Purdue University; and Mrs. William E. Roll.

Under comparable conditions, a 1% chlordane dust had a range of 0 to about 80% mortality, a 5% chlordane dust produced 90 to 100% mortality, about 2.25 ounces of sodium fluoride per 1,000 square feet gave 80% control, and 4.5 ounces of sodium fluoride per 1,000 square feet yielded 100% mortality.

A chemical description of silica gels and SG-67 was given by Davison Chemical Co.'s Earl K. Seybert.

"During our 38 years of manufacturing silica gels, we have known that pure silica gel is nontoxic to humans and warm-blooded animals," he indicated. "It has never produced silicosis in those who made or used the product. Crystalline forms of silica such as sand can cause silicosis, but no past recognized medical study or experience has shown that amorphous non-crystalline silica gels cause silicosis."

Registered with the U. S. Department of Agriculture, SG-67 is to be initially sold to PCOs only for experimental use.

Santocel C, a similar silica aerogel manufactured by the Monsanto Chemical Co., St. Louis, Mo., was discussed by J. M. Magner of Monsanto. Magner said Santocel C is not a desiccant and takes up only small amounts of moisture — 3.5% of its weight. Its oil absorption rate, however, is reported to be 3.0 grams oil per gram Santocel C.

VPI Roach Resistance Tests

In the first part of a two-part report, Dr. James M. Grayson, head, Entomology Section, Virginia Polytechnic Institute, Blacksburg, reviewed results in his 1958 NPCA-financed studies to determine the residual effect of 10 insecticide formulations on tempered masonite panels for resistant and non-resistant female German roach control.

Insecticides used were Thiodan as 0.5 and 1.0% emulsions; Sevin as 2.5 and 5.0% water suspensions and as a 5.0% emulsion; Dicapthon, 0.25, 0.5, and 1.0% emulsions and at 1.0% in oil; and 2% chlordane in oil. Panels were dipped in formulations and deposits allowed to age for 2, 7, 15, 30, and 60 days before roaches were placed on them. Mortality counts were taken at the end of one- and three- day periods of exposure to treated panels.

"As an emulsion," Dr. Grayson reported, "Dicapthon gave very high kill after 60 days of aging when applied at 1.0% concentration, after 30 days of aging when applied at 0.5% concentration, and after 15 days of aging when applied at a 0.25% concentration. A 1.0% oil base formulation of Dicapthon was slower in effectiveness than an emulsion at the same concentration."

Sevin, as a water suspension, showed "considerable" promise. It gave good control after 60 days of aging when applied at a concentration of 5.0%, and after 15 to 30 days when applied at a 2.5% concentration. However, a 5.0% emulsion of Sevin gave "very poor" control at all aging intervals.

Emulsions of Thiodan at 0.5% and 1.0% gave "unsatisfactory" kill of roaches, although moderate toxicity to non-resistant females was indicated. "Unsatisfactory" control of resistant roaches was obtained from a 2.0% chlordane oil base formulation after a three-day exposure period.

In the second phase of his report—this dealing with selection studies—Dr. Grayson reported that last January, chlordane-resistant and normal strains of German cockroaches were placed under selection pressure to malathion and Diazinon to determine whether resistance would develop to these organophosphorous compounds. This test also was designed to produce strains in which the history of exposure to these insecticides was known.

"Both malathion- and Diazinon-selected strains from a chlordane-resistant origin have been selected four times and are now in the F_3 generation, whereas similar strains from a normal origin have been selected three times and are now in the F_2 generation," Dr. Grayson said. "The criterion of selection for the first and second times was >LD-50, but it is planned that the level of selection will be gradually raised until it will be >LD-90 by about the F_6 generation."

Insecticides and Warehouses

Studies on insecticide application for preventive pest control in food processing warehouses were described by Hamilton Laudani, assistant head of the USDA's Stored-Products Insects Section, Beltsville, Md.

"Last year, in cooperation with Fairfield Chemical Div., FMC., New York, N. Y., and the Minute Maid Corp., we conducted a field test," Laudani said, "to study the practicality of using wet sprays on large stacks of stored, bagged feed; comparative effectiveness of wettable powder and aerosol treatments of pyrethrum-piperonyl butoxide to control or prevent insect infestation in dried-citrus pulp; most effective rate and frequency of applying synergized pyrethrum wettable powder; and effect of covering synergized pyrethrum - treated stacks with plastic film covers.

"The test was conducted in an all-masonry warehouse containing approximately 50,000 square feet of floor space," Laudani stated. "The dried citrus pulp was in 8-oz. burlap bags, each containing 100 pounds of the feed. Bags were arranged in 13 stacks. The feed had been in the warehouse for several months and had a natural insect infestation when the test was started in June 1957."

Two formulations of synergized pyrethrum were used in the test. The aerosol formulation contained 0.2% pyrethrins, 2.0% piperonyl butoxide, 50% tetrachloroethylene, and 47.8% deodorized kerosene by weight. The wettable powder contained 2% pyrethrins, 20% piperonyl butoxide, and 78% inactive ingredients by weight.

"The aerosol formulation," he

What's ahead in FHA's revised MPSs for termite control? That question was answered by W. Beverley Mason, Jr., shown above, right, with the NPCA's Dr. Ralph E. Heal.

said, "was applied at weekly intervals at the rate of 2½ pints per 10,000 cubic feet of total space. A thermal aerosol generator was set to deliver particles of about 5 to 10 microns mass median diameter. The area surrounding each of the stacks treated with the aerosol formulation was enclosed with 4-mil polyethylene sheets to insure that all of the insecticide discharged remained within the given area.

"The amount of insecticide used per stack in four weekly aerosol treatments was equivalent to that used in one monthly application of the pyrethrum-piperonyl-butoxide 5-50 mg./sq. ft. wettable powder treatment.

"The wettable powder was applied to the surface of the stacks at the rate of 5-50 and 10-100 mg. of pyrethrum-piperonyl butoxide per square foot, respectively. The lower rate of application was obtained by adding one-half pound of the wettable powder (2% pyrethrum plus 20% piperonyl butoxide) per gallon of water and applying this mixture at the rate of 1 gallon per 1,000 square feet of exposed bag surface or 2 gallons per 1,000 square feet of actual side and top stack surfaces."

Equipment used for applying the wettable powder was a 50-gallon power sprayer with a cattle spray gun having a No. 3 circular spray disc. The unit was operated at 300 pounds per square inch pressure. The spray was applied to the surface of the stacks in an up-and-down sweeping motion to insure good coverage.

"The total amount of insecticide used in the two methods of treatment was exactly the same," Laudani indicated, "yet over a period of three months the maximum piperonyl butoxide deposit with the aerosol application was 13.8 mg., whereas with the monthly wettable powder application, 150.5 mg. per square foot was obtained.

"Biological data also revealed that in three months the insect count rose rapidly in the aerosol-treated stack to an average high of 52.3 insects per quart sample. During the same period, the highest insect count in any of the wettable powder-treated stacks was less than 10 insects per quart sample."

Malathion wettable powder was tested this year, and it was found "very, very promising," Laudani reported. However, he said additional research will have to be conducted before it can be considered for insect control in citrus pulp warehouses.

A uniform account classification to standardize bookkeeping practices of PCOs would furnish a basis for comparative cost analysis among operators using the system. A description of a proposed classification and a recommendation for its use by Association members were made at the convention by Kenneth Weiser, left, and Fred New.

"Two seasons have shown," he concluded, "that it is practical to use wet sprays in citrus pulp warehouses if proper stacking is used."

For practical purposes, he added that the cost of material and labor is cheaper when wettable powders are used over aerosols, but original equipment expense is higher for the duster.

Committee Checks Out Dicapthon, Korlan, AS-575

In other insecticide research, William I. Elo of Elo Exterminating Co., San Antonio, Tex., chairman of the NPCA Insecticide Committee, reported that committee tests revealed there is still a staining problem involved in the use of Dicapthon.

"Of 25 reports we received from members using Dicapthon," Elo noted, "16 said it was good and they would use it, while five objected to stain, saying they would not take it yet. Four of the 13 who used it in water reported stain and nine complained of odor. Of the 12 who used it in oil, two complained of stain, five of odor. All but one member applied it for resistant German roach control. Applications were in hotel kitchens, duplexes, apartments, cafes, dairies, laundries, and homes.

Review of PCO legislation, animal control were provided by two Washington authorities. Covering these topics, respectively, were John D. Conner, left, and Noble E. Buell.

"Dicapthon will kill the resistant roach, but be very careful where you use it."

In committee tests with Korlan, "excellent" kill after one month was reported by all eight operators who used the chemical for resistant roaches. There was only one objection to its odor and one report of slight stain. Treatments were in hospitals, convalescent homes, grocery stores, homes.

Four others who tested Korlan for fly control reported good results.

"AS-575 was used by some of our committeemen for brown dog tick control," Elo said. "On numerous yards treated by one cooperator, the chemical did a splendid job. It should be used with care, and the dogs should be taken to a veterinarian for treatment at the same time the yard is treated by a PCO."

Rodent Committee Tests Cefro

Research by the Rodent Control Committee was concerned chiefly with the evaluation of Cefro, a candidate repellent. Committee chairman, Dr. Harlan Shuyler of Conservation Industries, Inc., Kansas City, Kans., reported Cefro appears to have value as a mouse, rat, bat, and squirrel repellent.

"Results of our tests are not conclusive since there have seemingly been several complete failures," Dr. Shuyler remarked. "Formulations with greater sta-

bility, which can be more easily applied and for which a more definite method of use can be prescribed, are needed." He recommended a continuation of committee studies on Cefro during 1959.

Observations by another committee member on the time of day and night mice have their peak food-seeking activity were also relayed to Association members by Dr. Shuyler. The report indicated mice most actively seek food during the evening between 9 and 11 p.m., and during a 30-minute period at daybreak — 5-5:30 a.m. The study was made with trapping devices.

In the area of rodenticides, Dr. Shuyler said his committee recommends against the use of Endrin for rodent control.

"Although Endrin has been used to control certain orchard mice in rural areas, there are many serious and severe hazards attached to the use of this material," he said.

No New Rodenticides

At the moment, there are no new rodenticides on the horizon, although some new modifications of existing rodenticides are in prospect, according to Noble E. Buell, chief of the Branch of Predator and Rodent Control, Bureau of Sport Fisheries and Wildlife, Washington, D. C.

"In general," Buell said, "the anticoagulants are continuing to do a good job on commensal rodents. Cereal-type baits are still a standard recommended formula. During the past year, there has been increased interest in use of anticoagulant water baits but there has been no significant general use of anticoagulants as tracking powders.

"One modification that shows promise under test conditions is the use of red squill as a tracking powder for rats and mice. This technique makes use of formulations of a 200 mesh powder having the desired properties of adherence to test animals, free flow under very humid conditions, toxicity, and acceptance."

This method, Buell explained, takes advantage of commensal rodents' natural habit to groom themselves. It was recently demonstrated they consume in this manner rodenticides which are refused in food baits or which produce bait shyness when eaten in sub-lethal quantities.

Buell cited several unprecedented animal population "explosions" in the past 12 months. Foremost among these was a 1957-58 meadow mouse eruption in the Pacific Northwest, where over 1 million pounds of rodenticides were used. In some fields, open holes into burrow systems numbered 28,000 per acre.

"Anticoagulant-type bait formulations generally proved impractical because of their slow action and the large quantity of bait material required," he reported. "Strychnine and zinc phosphide grain baits achieved only partial control since mice preferred to feed upon abundant green vegetation. Aerial applications of both zinc phosphide and 1080 grain baits were tried by several local agencies with very limited success.

"The final chapter of this mouse eruption is still being written, but present indications are that drastic population reductions have followed in areas of very heavy infestations. This sudden die-off, known as 'crash decline,' is typical of past recorded cases of mouse eruptions."

Another heavy animal build-up — this one involving Norway rats

Over 60 guests of the Association were invited to the banquet. Here are a few of them, left to right: (**1**) Dr. Thomas E. Snyder, retired world termite authority formerly with the U. S. Department of Agriculture, and Professor Arthur Bourne and Dr. Frank Shaw, from University of Massachusetts; (**2**) Mrs. Burdge, and J. Harrie Burdge, a pioneer PCO from Raymond, Me.; (**3**) Mrs. Sweetman, Dr. Harvey L. Sweetman, University of Massachusetts, Mrs. Laudani, and Hamilton Laudani, USDA; (**4**) Mrs. Bishopp, Dr. F. C. Bishopp, USDA, Mrs. Roark, and R. C. Roark, USDA; (**5**) Justus Ward, Head, Pesticide Regulation Section, USDA, Dr. Lyman S. Henderson, Chief, Stored-Products Insects Section, USDA, and Mrs. Henderson; (**6**) Arnold Mallis, author of "Handbook of Pest Control," Ernest M. Mills, U. S. Department of Interior, Dr. William E. McCauley, Shell Chemical Corp., and Mrs. McCauley; (**7**) Dr. Avery S. Hoyt, USDA, and A. S. Roe, U. S. Department of Health, Education, and Welfare; (**8**) Dr. Frank L. Campbell, Ohio State University, and Mrs. Campbell. All gentlemen pictured here are honorary members of the NPCA, except Mr. Roe.

New NPCA officers for fiscal '58-59 are, left to right, executive vice president, Harold Schnorrenberg; president, Wayne K. Davis; secretary-treasurer, Charles W. Houghton.

along banks of inundated rice paddies in Haiti — was counteracted by placing zinc phosphide sweet potato-oil baits along edges of fields and anticoagulant-type grain baits near dwellings.

To handle a large cotton rat infestation in the South, where reinfestation from adjacent areas complicated control, the Bureau supplemented zinc phosphide and strychnine - treated baits by trenching around high value crops, and fumigating the trench with 50% methyl parathion. Cotton rats are small field rodents closely related to meadow mice.

"Although PCOs are not often involved in eruptions of field rodents, experience gained in these outbreaks has taught several lessons of practical value," Buell stressed. "Foremost is the rapid development of bait aversion demonstrated by rodents subjected to sub-lethal amounts of fast-acting rodenticides. When dealing with heavy infestations of commensal rats and mice as well as field rodents, effective use of rodenticides is largely dependent upon attractiveness of the bait or carrier, the application of adequate amounts of bait material, and proper placement of baits.

"Furthermore, when treating an establishment open to constant reinfestation from adjacent property, the periodic changing of both the rodenticide and bait is important."

PCO Legislation Trend

What's the legislative outlook regarding use of toxic rodent and insect control chemicals? Attorney John D. Conner of Cummings, Sellers, Reeves, Conner and Kendall, Washington, D. C., predicted hazardous substances legislation will be considered in many state legislatures next year. And from such labeling control, he indicated, it is only one step to use-control — or licensing.

Conner said New York City is now drafting a sanitary code which will provide a comprehensive regulation system covering PCOs. It is to provide licensing of fumigation activities; prohibit use of all toxic insecticides in food establishments except where specific ones may be used on an individual permit basis; and prohibit use of thallium sulphate and 1080 except on an individual permit basis.

"The pest control industry is still relatively free from regulatory control," he remarked. "However, the PCO is working in an atmosphere charged with regulatory control. The extent of pressure to extend controls will depend upon the extent of PCO safety practices and the need for additional public protection."

To check up on members' safety practices, the Safety Committee, headed by William Turrie, Wil-Kil Pest Control, Milwaukee, Wisc., surveyed members to learn the number and type of disabling injuries in their companies during 1957. Since only a 14% return was realized, no accurate conclusions could be drawn, the chairman explained.

Dr. Philip Spear, NPCA technical director, presided over the technical session; Herman Fellton, Getz Exterminators, Inc., St. Louis, Mo., over a "Question Box" period; Charles Cushing, Vogel-Ritt, Inc., Philadelphia, Pa., over the "25 Years of Progress" session; Herman Ratner, Ratner Pest Control, Atlantic City, N. J., the business session; and Dr. Ralph Heal, NPCA executive secretary, presided at the closing session of speakers.

Davis, Schnorrenberg, and Houghton, '58-'59 Officers

Last year's executive vice president, Wayne K. Davis of Ailing House Termite Inspection Bureau, Oakland, Calif., was unanimously elected NPCA chief executive for the coming year, beginning November 1. Chosen to serve with him are Harold Schnorrenberg of Dead Shot Chemical Co., Oklahoma City, Okla. as executive vice president, and Charles W. Houghton, Safety Fumigant Co., Boston, Mass., secretary-treasurer.

Voting down last year's action to hold the 1962 convention in Bermuda, delegates chose Kansas City, Mo. as its meeting site four years from now. And for '63, enthusiasm for San Francisco, Calif. won out to take the convention back to the West Coast, where it has not been held since 1949. Next year, the Association meets at Buena Vista Beach Hotel in Biloxi, Miss., Oct. 18-22.

National chairman for the Biloxi meeting is K. C. Bell, Bell Pest Control, Amarillo, Tex.; local convention chairman, G. L. Edwards, Redd Pest Control, Jackson, Miss.

Some worked while others, free of convention responsibilities, could sightsee. Tom Mahon, NPCA administrative assistant, unpacked his bags to begin work three days before sessions began. One afternoon delegates boarded busses for a tour of Washington and Mt. Vernon. Far left in top center photo is local co-chairman Al Bender and his wife supervising beginning of tour. One night delegates dined at Hogates Fish House. Here retiring president J. C. Redd (left) exchanges stories with Harold Schnorrenberg, new executive v-p, while their wives look on after downing seafood. In the lower left photo, convention chairman, Herman L. Fellton, looks at banquet crowd with Teddy and Mrs. William O. Buettner, son and wife of the NPCA's first president and executive secretary. In charge of awarding exhibitors' prizes were NPCA executive assistant Robert L. Showalter, PCO John K. Medoff of Hudson, N. J., Mrs. J. C. Redd, and PCO Ben Hayes of the local committee. In the lower right candid is F. Kenneth Harder, Harder Extermination Service, Hempstead, N. Y., proposing the NPCA establish a William O. Buettner Research Foundation. Membership liked the idea and requested staff to investigate it further.

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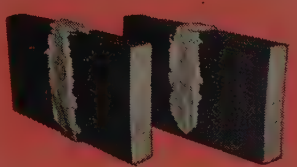
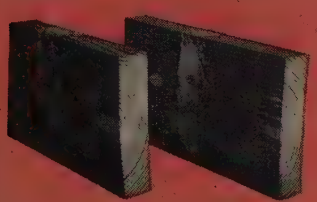
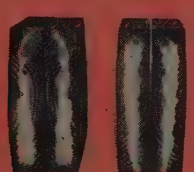


Southern Yellow Pine penetration test shows WOODTREAT-TC on first day of application.



Four days later. Note diffusion of Penta and oil from point of application to end of plank. Dried crust is almost ready to flake off or be brushed off.



Cross section of above boards at point of application. Penta has made almost complete penetration in 4 days!

It's the talk of the industry! PCO's everywhere say WOODTREAT-TC is the most effective, longest-lasting, most profitable method they've ever used for controlling termites, powder-post beetles, fungus, rot and decay!

WOODTREAT-TC is a brand new idea—a patented oil-in-water emulsion toxic coating incorporating 10% Penta by weight in the oil phase. Its paste-like consistency holds the Penta-oil phase in suspension while it is absorbed deep into the wood in a few days—a ¼" to ½" coating gives penetration equal to 20 brush coats of 5% liquid Penta! Retention is 6 to 11 times greater than application by brush. Surprisingly easy to apply with brush or paddle, it's a real time and labor saver—a real money-maker for you!

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How to Identify and Control Carpenter Ants

by H. ELDON SCOTT

Extension Entomologist
North Carolina State College, Raleigh, North Carolina

Occasionally the identity of winged termites and winged carpenter ants is confused. There are, however, distinct differences. The ants, reddish-brown or black in color and measuring about ½ inch long, have a pinched or wasp-waisted area just behind the point of attachment of the wings; termites do not. Carpenter ants have a pair of forewings only slightly longer than the abdomen when they are folded at rest. Hind wings are much shorter. In termites, both fore and hind wings greatly exceed the length of the body.

The following comments on life history refer to the genus **Camponotus** since it is our most common group of carpenter ants.

The queen (female), after her nuptial flight, finds a suitable place for a nest. She lays a few eggs, which hatch into small workers. These are fed by the queen until they can forage for themselves. All broods, except the first, are fed and cared for by the workers. It takes about nine weeks for ants to develop from the egg, through the larval and pupal stages to the adult. Three or more years are usually required for the development of a strong colony, containing workers, reproductive forms, and immature individuals. Since this progress is relatively slow, their damage is not as extensive as that of termites.

Where to Look for Nests

Always in search of a new home, carpenter ants usually attack weathered or slightly decayed soft wood. Some of their favorite nesting sites are utility poles, fence posts, porch columns, window sills, foundation plates, roof structures, and dead parts of living trees.

Actually they may establish a nest in any suitable timbers, the infestation beginning either as the result of the entry of one fertile female or through the immigration or spread of an existing colony.

Once an infestation occurs, it should be determined what the cause is. If the infestation is in a roof, check shingles and repair them when necessary. If the ants infest a wall, investigate all downspouts from the guttering. Always eliminate cause of dampness in wood, repair the damage, and treat the area infested with a recommended chemical.

How to Identify Damage

Damage is characterized by clean tunnels which often cut across the grain of the wood. Termite tunnels, on the other hand, follow the grain in the wood, are always covered by a grayish material, and are somewhat stained in appearance. Piles of shredded fibers are also associated with carpenter ant damage, since the ants chew the wood to provide larger brood chambers. They do not eat the wood, however. Termites, of course, actually eat wood and do not expel any of it from their galleries.

Carpenter ants get their nourishment from honeydew produced by aphids and related insects, and from dead animal material, especially insects. In the home they are attracted to sugar-containing materials.

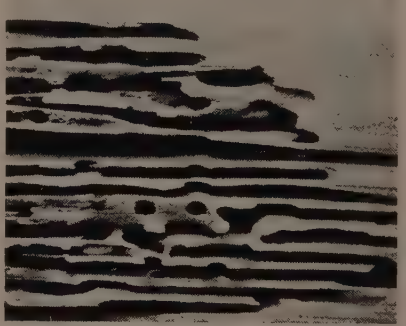
As a preventive measure, it would be well to eliminate all old stumps or decaying trees located near the house. Some houses are built over stumps, which constitute a real hazard to the home since stumps attract ants. Their entry should be prevented by the sealing of all foundation cracks and wall openings.

Chlordane, Dieldrin for Control

Dusts of 5% chlordane or 1% dieldrin give good control of car-

Carpenter ant life, from egg, (small oval, indicated in the center), to larva, pupa, and wingless male and winged female adults.

Termite (top), carpenter ant (bottom): Note difference between waists of the two, and the difference between their wing lengths.



Termite, carpenter ant wood damage. (Top) Photo shows tunnels following the grain of wood are dirty. (Bottom) Typical carpenter ant tunnels that cut across grain, are clean.

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It's fast, safe, economical, effective! An example in point: Fumigating bulk grain storage

FAST: Pestmaster* Methyl Bromide comes in pressurized cylinders, ready for introduction into building through the aeration system. Once the building is sealed, use of Methyl Bromide is almost pushbutton automatic.

SAFE: Pestmaster* Methyl Bromide is introduced into aeration system by tubing from cylinders operated safely from outside building. Methyl Bromide is non-explosive, non-flammable, non-corrosive.

ECONOMICAL: No compressor, expensive tube-rigging, or covering for grain needed. Pest Control Operators can achieve significant savings in set-up time and equipment costs. And, Pestmaster* Methyl Bromide's unusually high penetrating power permits thorough fumigation with noticeable reduction in labor and materials cost.

EFFECTIVE: Pestmaster* Methyl Bromide is heavier than air, penetrates even the lower levels of grain — an important factor in all bulk grain fumigation. Provides a quick, effective kill of insects in all stages of life. All rodents quickly destroyed.

SPECIAL PCO SERVICES: Michigan Chemical's Field Service Personnel offer PCO educational help in sealing building, introduction of Methyl Bromide into grain, aeration, premise inspection. Grain sample analysis by independent laboratory is available when required.

AUTHORITATIVE FUMIGATION MANUAL, *available on request. Write today for your free copy.*

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penter ants. Sprays, however, are more commonly used than dusts. The following amounts of each insecticide in water are needed to make 3 gallons of spray:

Chlordane: 1 pint of 40% emulsifiable concentrate; or 1 pound of 50% wettable powder.

Dieldrin: 1 pint of 18% emulsifiable concentrate; or 1 pound of 25% wettable powder.

DDT, sodium fluoride, and rotenone have also been used to control these pests.

Fumigants can be used in confined areas to give fast temporary relief. Since materials such as carbon tetrachloride have no residual action, reinfestation may soon occur.

The best way to avoid damage by carpenter ants is to inspect structures frequently, repair areas affected by excess moisture immediately, and treat with a recommended insecticide such as chlordane or dieldrin.

But don't limit inspections and repair to the structure. Check stumps and other possible outside infestation points near the house.

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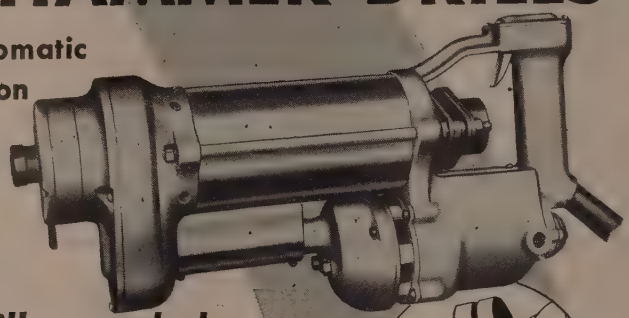
with automatic bit rotation



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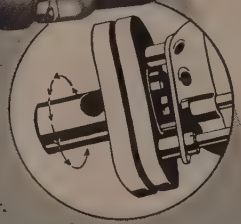
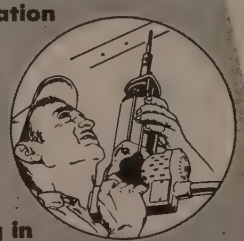
Constructed for long dependable service and will maintain their efficiency with a minimum of maintenance.

Available with capacities from 5/8" to 2" diameter holes.

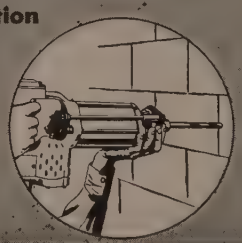
Also available SYNTRON Electric Hammers for cutting, chipping, etc.



automatic bit rotation



easy drilling in any position



for more information PC 258
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Spurt in Okla. Termite Work

The number of termite jobs in Oklahoma reported to the State Department of Agriculture for fiscal 1957-58 increased 25% over over 1956-57, according to figures released last month by Clyde A. Bower, state entomologist.

For the year ending June 30, 1958, Bower said 6,843 termite jobs were reported in his state, compared with 5,121 during the same period in 1956-57. Likewise, termite inspections by the State Board of Agriculture increased from 869 in fiscal 1956-57 to 1,242 in 1957-58. Sixty-one infestations were found compared with 39 discovered the preceding year.

Total inspections for termite and pest control work totalled 2,237, an increase of 453 over the last fiscal period.

Bower also reported that 118 termite control licenses and 93 pest control licenses were issued in Oklahoma in 1957-58. No licenses were cancelled, he said.

'57 Wood Preservatives Use Up

In 1957, wood preservers treated 16.6 million cubic feet more wood for protection against decay, termites, marine borers, and fire than preservers treated in 1956, the American Wood-Preservers' Association disclosed in October.

Last year, reporting plants consumed 235,224,111 gallons of liquid preservatives and 21,937,295 pounds of solid preservatives. This represented production of 339 wood preserving plants, 250 of which are pressure-treating plants, 67 non pressure, and 22 equipped for both processes. Number of reporting plants was 14 higher than in 1956.

UCLA Has New Termite Booklet

A 16-page, liberally illustrated booklet covering "Prevention and Control of the Western Subterranean Termite," has been prepared by the University of California. It covers chiefly termite habits and characteristics, home inspections, detection of infestation, where to use lumber treated with preservatives, and chemicals and percentages for soil treatment.

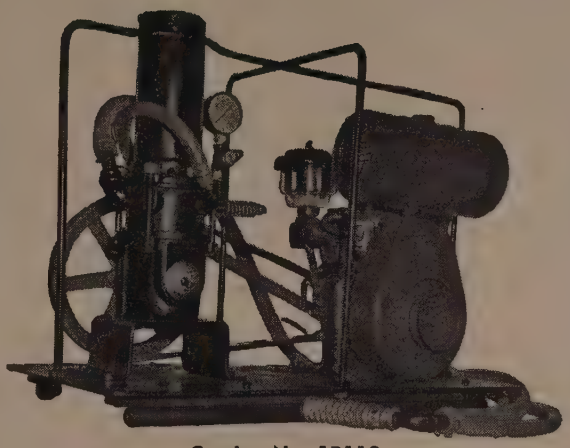
Written by UCLA's Dr. Walter Ebeling and Roy J. Pence, Circular 469 is available free of charge from the Agricultural Publications Office, 22 Giannini Hall, University of California, Berkeley 4, Calif.

Another FIRST For PRESHUR-MITE

A NEW Portable Spraying & Termite Treating Unit With A Pump That Does Away With Your Pumpaches

NEW DIAPHRAGM PUMP Eliminates expensive break - downs, can be repaired on the job in less than ten minutes with extra kit which comes with each unit. Unit comes fully equipped with 100 Ft. 3/8" I. D. chemical hose & Accessories. Wt. Approx. 145 lbs.

Complete line of Electric and Gasoline Powered Portable Sprayers, Accessories & Tools, etc.



Catalog No. 1B119

Portable unit shown handles abrasive & corrosive chemicals used in termite, pest, weed & grass control applications without damage to pump's pumping parts. Capacity 6 gal. per minute, pressure adjustable to 175 P.S.I. Agitates 55 gal. steel drum of solution thoroughly.

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save chemicals save time

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SPRAYING SYSTEMS CO.

TRIGGER TEEJET HAND SPRAYERS—with choice of interchangeable orifice tips for flat, cone and straight stream sprays. All capacities. Quality shut-off valve. Write for Bulletin 68.

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TEEJET SPRAY NOZZLES—choice of over 400 interchangeable tips for every type of spray.

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GUARD YOUR REPUTATION with Vaccinol

BONDED CHEMICAL

Facts Prove That VACCINOL Is Chemical You Can Trust for Lasting Termite Control. Proven Effective for Over 25 Years Against Termite and Other Wood-Eating Insects.

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What's NEWS In The Industry

'58 Business Better Than Last Year Despite Slow First Quarter, PCOs Say

Early in April of this year, the pest control industry reported business was down from the first quarter of '57, but the economic picture for most PCOs has changed as '58 draws to a close.

At last month's industry convention in Washington, optimism was being displayed everywhere and prosperous PCOs were happily reporting total volume of sales in '58 will top any previous year. Range of improvement in '57 over last year varies from 18 to 40%.

Surveys made by PC magazine, and by McGraw-Hill economists, indicate next year the urban/industrial pest control industry will realize a 10% increase in overall business.

Where are better sales coming from? Delegates said total business was improved, but a headcount revealed more operators are bolstering income from increased activity in termite soil poisoning, retail product sales, and weed control.

In 1955, 30% of the operators canvassed said they were engaged in weed control; this year 41% offer this service. Three years ago, 48% sold allied sanitation products such as aerosols, deodorizers, small sprayers, and packaged pesticides. Now the percentage has increased to 63%.

Prospects of FHA approval of soil poisoning as an acceptable measure for new-home protection against termites stimulated this phase of the industry's activity. Chemical suppliers report that in the past 10 months the greatest gallonage of soil poisoning termiticides ever sold were shipped to PCOs for termite pre-treatment work.

Confident more profits will be made by this time next year, many plans for expansion were talked about at the NPCA meeting. The demand for technically-trained supervisors is putting pressure on the availability of skilled personnel in this industry as in many others. Several operators revealed expanded activity in sales promotion and advertising. Others told of building new and larger quarters, buying new equipment and increasing service crews to handle a better volume of business more efficiently.

Spring gloom has changed to fall reports '58 will be a banner year for this industry.

Ky. PCA To Meet Nov. 17-18

The Kentucky Pest Control Association will hold its annual meeting November 17-18 at the Campbell House in Lexington.

Among key speakers on the program are Dr. John V. Osmun, head, Department of Entomology, Purdue University; Dr. Lee Townsend and Dr. J. Rodriguez, both of the University of Kentucky; A. P. Bell, Kentucky Health Department; Dr. Ralph E. Heal, executive secretary, National Pest Control Association; and a representative of the Kentucky State Agricultural Department.

Ohio PCA Sets Dec. Convention

Annual convention of the Ohio Pest Control Association will be December 1-3 at the Sheraton-Mayflower Hotel, Akron.

Among speakers on the technical program is J. J. Davis, professor emeritus, Purdue University. J. E. Gulick, B. F. Goodrich Co., Akron, will be main banquet speaker.

Ladies attending are to receive a free luncheon and a tour of the Stan Hywet Hall art exhibit, according to convention chairman W. J. Morris, A-1 Termite Control, Akron.

Tennessee Pest Control Association members at tenth annual meeting in the Noel Hotel, Nashville, September 19-20, heard talks on a wide range of topics. Key speakers included W. F. Moss, Tennessee Commissioner of Agriculture; J. O. Rowell, Virginia Polytechnic Institute, Blacksburg, Va.; J. C. Redd, Redd Pest Control, Jackson, Miss., 1957-58 president of the National Pest Control Association; and H. W. Ives, Rose Exterminator Co., Detroit, Mich. The picture above was taken during an association luncheon on the final day of the meeting.

$100 scholarship check from Iowa PCA to Iowa State College. Highlight of the Iowa Pest Control Association's Fall Meeting in Cedar Rapids' Sheraton-Montrose Hotel September 25-26 was the association's presentation of a $100 check to the Zoology and Entomology Department of Iowa State College for use by the school's Scholarship Committee to help stimulate interest in the study of entomology. Above, Iowa PCA treasurer, Charles Zilm, Anti-Termite Co., Inc., Des Moines, presents the check to Dr. Harold Gunderson, Iowa State College extension entomologist. With the two, left to right, are William Kohlhaase, Industrial Termite Control, Omaha, association vice president; John Peterson, Hawkeye Exterminating Co., Des Moines, secretary; and Fritz Berger, Atomic Pest Control, Ottumwa, president. About 40 members were on hand for meeting talks covering bird, rodent, fly, mosquito, and termite control; resistant roaches.

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PEST CONTROL SUPPLY DEPARTMENT

At the N.P.C.A. Silver Anniversary Convention last month, S. B. Penick & Company announced the formation of a Pest Control Supply Department designed to offer you:

- Individualized service
- Printed order blanks
- Detailed price lists
- Shipments made within 24 hours
- Stocks always available
- Technical bulletins

For better control of insects and rodents, use these Penick laboratory-controlled pesticides:

Sulfoxide-Pyrexcel 20
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Please rush FREE Illustrated Catalog of Insect Models and Displays You Manufacture. I Understand these Giant Models will help me greatly in my advertising program.

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Calendar

(New York) Professional Exterminators Assn.'s November Meeting, Museum of Natural History, New York City, Nov. 10, 8 p.m.

Oklahoma Pest Control Assn. November Meeting, Room 122, Capitol Building, Oklahoma City, Nov. 11, 7:30 p.m.

Kentucky Pest Control Assn. Annual Meeting, Campbell House, Lexington, Nov. 17-18.

Ohio Pest Control Assn. Meeting, Mayflower Sheraton Hotel, Akron, Dec. 1-3.

Nebraska Assn. of Pest & Termite Control Operators, Inc. Annual Meeting, Pathfinder Hotel, Fremont, Dec. 4-5.

Texas Pest Control Assn. Annual Convention, Rice Hotel, Houston Dec. 4-6.

Chemical Specialties Manufacturers Assn. 45th Annual Meeting, Commodore Hotel, New York City, N. Y., Dec. 9-11.

Kansas Termite and Pest Control Assn.'s December Meeting, Omberger Hall, Manhattan, Dec. 12, 8:30 a.m.

Pest Control Operators of California, Inc. December Meeting, Cal-Poly Conference, California Polytechnic College, Pomona, Dec. 12-13.

Arkansas Pest Control Assn. December Meeting, Hotel Marion, Little Rock, Dec. 20, 10 a.m.

CDC Identification and Biology of Arthropods Course No. 241, Atlanta, Ga., Jan. 12-23, 1959.

Indiana Pest Control Operators Assn. January Meeting, Purdue Memorial Center, Purdue University, Lafayette, Ind., Jan 26.

22nd Annual Purdue PCO Conference, Purdue University, Lafayette, Ind., Jan. 26-30.

Pest Control Operators of California, Inc. State Convention, Hotel Claremont, Berkeley, Feb. 12-14.

American Mosquito Control Assn. Annual Meeting, Salt Lake City, U., April 12-15.

Alaska Puts Heat on Bedbugs

(from page 15)

5%, was used as a residual spray after heating.

The living units were not occupied for a period of one month. Total cost for treatment and expenses at the present time is between $4,000 and $4,500. A bill was sent to the Eastern family; some small payments have been received by the apartment house owner.

The family that inadvertently occupied Unit No. 1 immediately after the Eastern family had vacated it for Unit No. 2 had been building a new home in the country. The dwelling was not complete, but the family had moved in and was finishing the house. Subsequently they discovered a few bedbugs apparently transported from the apartment house. In desperation, they paid about $200 to have a commercial pest control operator flown in from Seattle to do a cyanide fumigation.

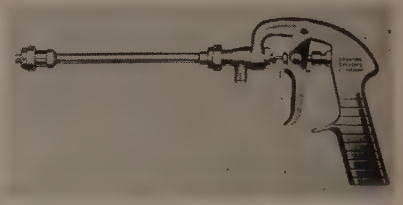
The question may be asked — why was not cyanide employed in the beginning at the apartment house? To fumigate, it would have been necessary to evacuate the entire apartment building. This included 75 families, a super market, and an auto supply store. It was too great a project, and the accompanying publicity would have done irreparable damage from a business standpoint.

Texans to Write Model PC Law

The Texas Pest Control Association, Inc. has voted to prepare a model pest control law in the event a non-association sponsored bill for such legislation is introduced into the Texas Legislature. The action was taken at the association's Fall Quarterly Meeting September 6 in Austin.

Hub States Has New Vents

A new Lite-A-Vent Aluminum Ventilator is being distributed by Hub States Chemical & Equipment Co., 1255 Windsor St., Indianapolis 1, Ind. Rustproof, the ventilator is said to feature a large, double-strength movable window shutter and a self-locking lever that can be used to adjust the vent's window to any height to keep understructures dry and odor free. A built-in screen stops mouse and insect entry. The Lite-A-Vent measures 8" x 16" and is reported to meet Federal Housing Administration requirements.



Shut-off control at the nozzle: that's the feature of this new drip-proof spray gun designed by Spraying Systems Co. Equipped with the shut-off valve immediately behind the nozzle tip to provide complete shut-off of both gun and extension, the new GunJet 22-7676 comes in a choice of 8", 18", 24", 36", and 48" extensions. Complete information on the model is carried in Data Sheet 7676, available from Spraying Systems Co., 3221 Randolph Street, Bellwood, Illinois.

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Exclusive! PCO NEWS

PCO's BUY ALL CHEMICALS, EQUIPMENT FROM HUB STATES IN ONE ORDER TO SAVE!

Hundreds of PCOs are taking advantage of Hub States' money-saving plan. Now you can combine shipments of both chemicals and equipment for free delivery on orders over $45.

Last month Hub States announced the addition of many new items to their stock to offer you the most complete selection of chemicals and equipment ever! All at low low prices, too.

RODENT CONTROL SUPPLIES

RAT JIGGER Bait Stations, 1M to 5M $5.92
5M, per M $5.62

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Complete CHEMICAL Service

***Dicapthon* New German Roach Killer**

- Benzene Hexachloride
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- Dieldrin
- Lethalaire Cylinders
- Paradichlorobenzene
- Pentachlorophenol
- Pyrethrins
- Sodium Fluoride
- Weed Killers
- Grain Fumigant
- Germotox
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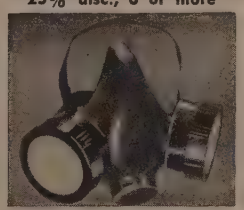
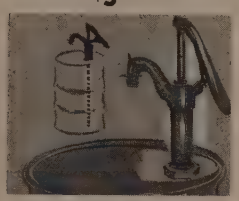
Challenger Sprayers
Portable electric fogger with automatic timer.
$84
10% disc., 3 or more
25% disc., 6 or more



Willson Respirators
All-purpose protection
$5.25



Barrel transfer Pump
Lever action. Suction Lift. Telescopes to fit any drum.
$12.95

Blackwell Sprayers

Hammer Tone Finish **$25**

Chrome Plate Finish, $39.

10" wand, 250-lb spray hose, brass pump, 20-gauge 1½ gal tank.

Protective Masks

for every PCO job!

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- Willson Dust Masks
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Foundation Ventilators

$3.00

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Contains pertinent portions of the Department of Agriculture's **Cooperative Economic Insect Report**, material from university entomology departments and reports from readers. PCOs noticing infestations in their own areas are urged to communicate with **Pest Control** so their information may be added to this infestation report.

ASIATIC OAK WEEVIL

(Cyrtepistomus castaneus)

Maryland: Coming to lights and entering houses in Prince Georges, Charles, and Montgomery Counties. **West Virginia:** Heavy around Richmond area, and abundant on oaks on Eastern Shore. Very heavy around a house in Orange County and appeared by thousands on windows. Air pressure hose used to blow pests off motors of cars at filling station. Swept up by gallons each night. Heavy around few homes in several counties.

BATS

Arizona: State Health Department laboratory in Phoenix conducting tests on bats collected in old mine shaft to determine whether they are rabies vectors. Rabies diagnosed in Arizona bats last year by the State Health Department.

TERMITES

New York: Carload of Douglas fir two-by-fours, shipped from Pacific Coast to a lumber yard in central Hudson Valley, found to be infested by Zootermopsis augusticollis. Consisting of 350 pieces, infested lot was burned and the ground of storage area treated.

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The Glenn Chemical Co., Inc., Chicago, Ill., has changed the name of its insect repellent, formerly known as Tabutrex, to Tabatrex.

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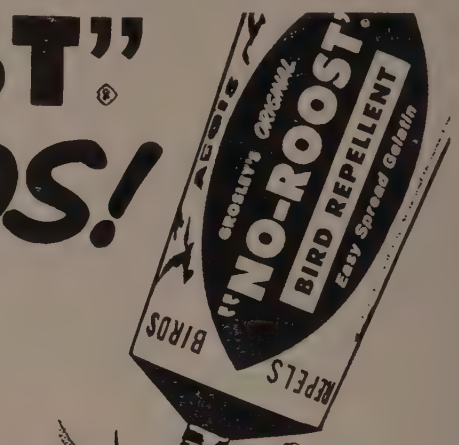

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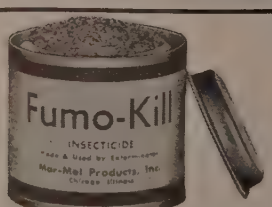

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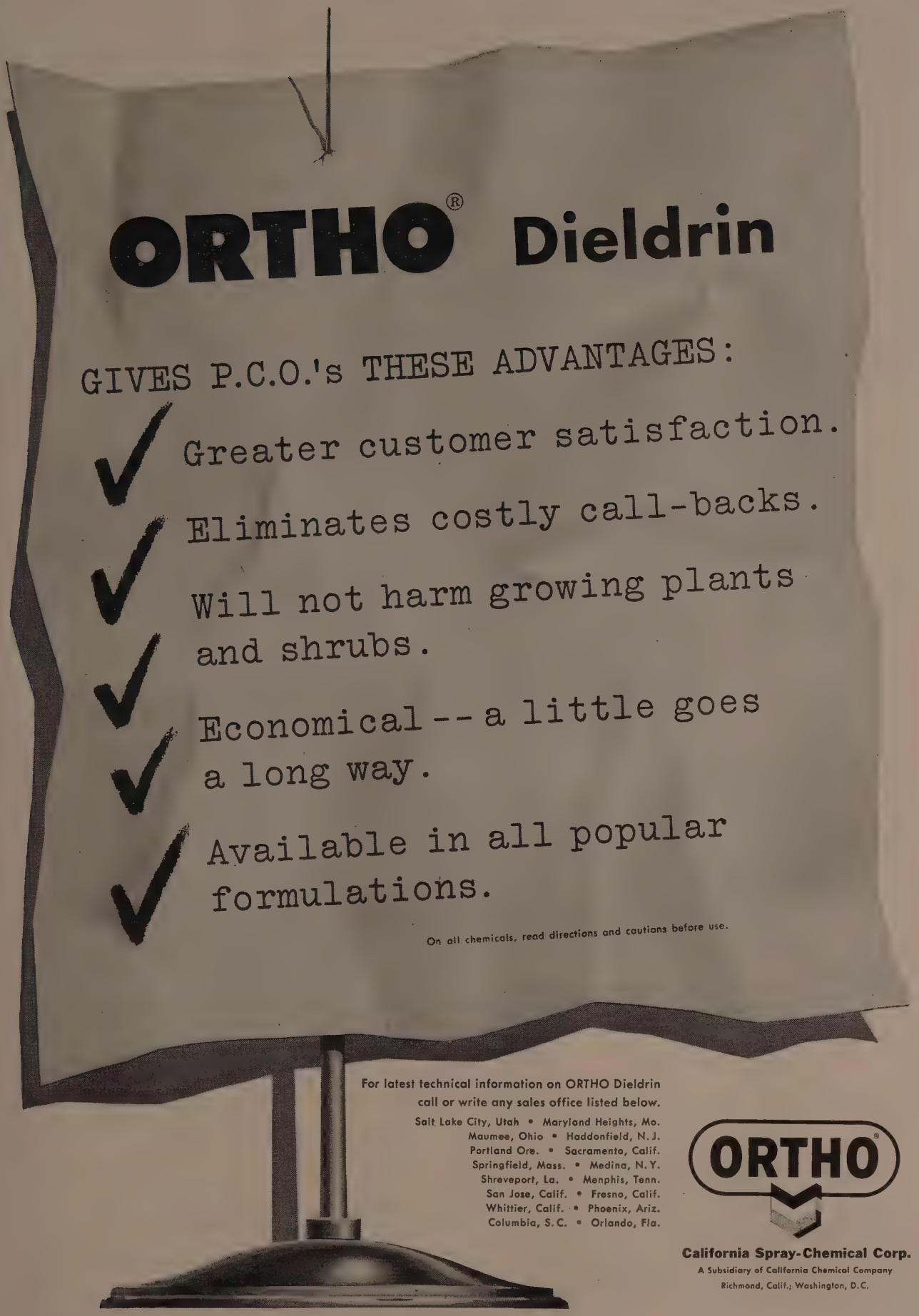
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Primer

How's Your Vocabulary?: 11

The following series of expressions and their definitions, prepared by the Entomology Department of Purdue University for one of Purdue's annual PCO Short Courses, has been juggled out of order to challenge your knowledge of common entomological terms. Phonetic pronunciations have been added, along with capital letters to show where emphasis goes. See if you can match them up correctly.

1. ___rheotropism *(re OT ro pizm)*
2. ___sacrophagous *(sak ROF a gus)*
3. ___sanguinivorous *(sang gwin IH ver us)*
4. ___saprophagous *(sa PROF a gus)*
5. ___saprophyte *(SAP roh fight)*
6. ___scavenger *(SKAV en jer)*
7. ___segment *(SEHG ment)*
8. ___semi- (prefix) *(SEM i)*
9. ___seta *(SEE tuh)*
10. ___skeleton *(SKEL a tuhn)*
11. ___slug *(sluhg)*
12. ___species *(SPEE sheez)*
13. ___specimen *(SPESS a muhn)*

(a) blood-eating; blood feeding.
(b) orientation to currents of water.
(c) a ring or subdivision of the body or an appendage between areas of flexibility associated with muscle attachments.
(d) any plant, animal living on dead or decaying vegetable matter.
(e) a sample; a single example of anything, e.g., of an insect.
(f) a kind; the primary biological unit, debatably an actual thing or a pure subjective concept; a static moment in the continuum of life; an aggregation of individuals alike in appearance and structure, mating freely and producing young that themselves mate freely and bear fertile offspring resembling each other and their parents, including all varieties and races.
(g) in insects, the hard chitinous or sclerotized parts which form the external protective covering of the body and the internal points of attachment for the muscles.
(h) in general, any larva that has a slimy, viscid appearance, with the body, closely applied to the food plant; specifically, the larvae of certain sawflies and of some Coleoptera.
(i) half.
(j) commonly known as hairs; slender hair-like appendages.
(k) a feeder on decaying or waste matter.
(l) flesh-eating; feeding on flesh.
(m) feeding on dead or decaying animal or vegetable matter.

Answers on page 40

Honeycutt Is Ala. PCA Head

New president of the Alabama Pest Control Association for fiscal 1958-59 is J. O. Honeycutt of the Orkin Exterminating Co. office in Birmingham.

Other new officers elected at the annual meeting, September 12-13 in Montgomery's Jefferson Davis Hotel, included vice president, Dr. E. B. Vinson, Dexter Pest Control, Birmingham; secretary, Charles Rice, C & L Exterminating Co., Gadsden; and treasurer, H. H. Stanley, Atomic Exterminators of Alabama, Opp.

Speakers were B. P. Livingston, USDA, Montgomery; R. J. Kowal, U.S. Forest Service, Asheville, N. C.; A. F. Verral, Division of Forest Disease Research, New Orleans, La.; Prof. W. A. Ruffin and Prof. F. E. Guyton, Alabama Polytechnic Institute, Auburn; J. C. Leavell, Montgomery insurance representative; J. C. Redd, Redd Pest Control, Jackson, Miss., NPCA 1957-58 president; and PCOs Honeycutt, Cook, Rice, Dr. Vinson, James Sims of Cardinal Pest Control in Montgomery, Joe Treadwell, Rebel Pest Control, Montgomery, and W. Baker, Dorough Pest Control, Notasulga.

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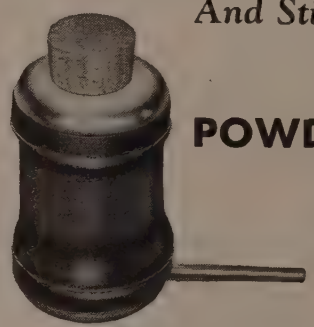

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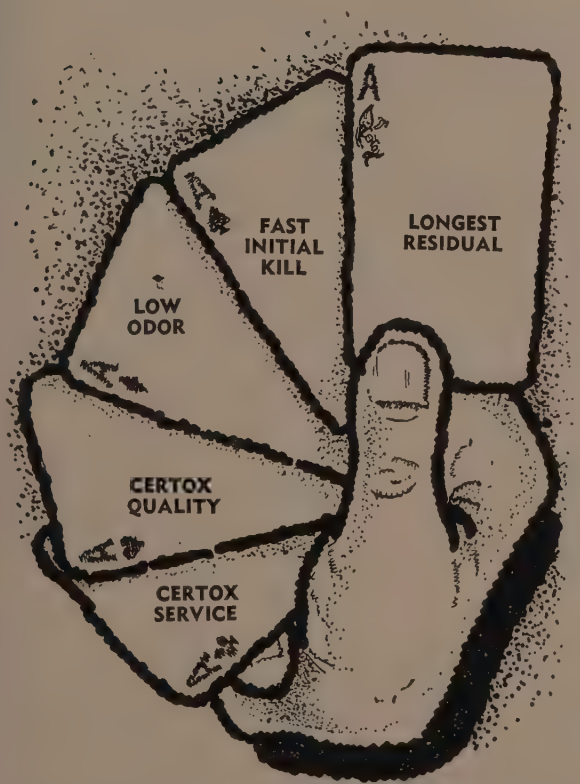

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When answering ads where box number only is given, please address as follows: Box number, c/o Pest Control, 1900 Euclid Avenue, Cleveland 15, Ohio.

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STATEMENT OF OWNERSHIP

Statement required by the Act of August 24, 1912, as amended by the Acts of March 3, 1933, and July 2, 1946 (Title 39, United States Code, Section 233) showing the ownership, management and circulation of Pest Control, published monthly at Painesville, Ohio, for September 23, 1958.

1. The names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Trade Magazines, Inc., 1900 Euclid Avenue, Cleveland 15, Ohio; Editor, James A. Nelson, 1900 Euclid Avenue, Cleveland 15, Ohio; Managing editor and business manager, none.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.)

Trade Magazines, Inc., 1900 Euclid Avenue, Cleveland 15, Ohio; James A. Nelson, 1900 Euclid Avenue, Cleveland 15, Ohio.

3. The known bondholders, mortgages, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none so state.) None.

4. Paragraphs 2 and 3 include, in case where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required from daily, weekly, semiweekly, and triweekly newspapers only.)

JAMES A. NELSON, Publisher

Sworn to and subscribed before me this 23rd day of September, 1958.

WILLIAM A. BROWN, Notary Public

My commission expires January 20, 1960.

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TECHNICAL PERSONNEL wanted by large service-minded company. Duties to assist branch offices in pest and termite control services. Some travel and no sales required. Degree helpful but not essential. Benefits include life insurance, hospitalization, pension, paid vacation, and sick leave. Ample opportunity for advancement. Send resume including salary history. All replies confidential. Interviews in Atlanta by invitation at our expense. Write in detail to Orkin Exterminating Co., Inc., 713 W. Peachtree St., Atlanta, Ga. Attention: Technical Dept.

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WILL PAY TOP PRICE for exterminating business in New York City area. Cash. Replies confidential. Box 439, Pest Control magazine.

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Pestales

Four industry deaths. The industry was saddened to learn of the deaths of four of its members recently. Frederick L. Leighton, who operated Sun-X Sanitary Service Registered, Montreal, Canada, died September 5 at the age of 72 (survived by his widow, Margaret—brother, Ross). Then on September 15, Mrs. Mildred Scherzinger of Cincinnati, O. passed away. She was the wife of Bernard C. Scherzinger and mother of Edward and William Scherzinger of the B. C. Scherzinger Co., and took part in many women's activities within the industry. William F. Exner, 72, who ran Termite Control Co. in St. Louis, Mo., died August 10th from cardiac complications. His wife Edna plans to sell the business. Mrs. Frances Gilman is selling the business ran by her husband, Gilman Chemical Co. in Mexico, Mo. He passed away Sept. 11.

* * *

Red carpet to green garden. Near International Falls, Minn., Francis and Delores Holler are fed up with the way their "pet" chipmunks are feeding up — at the Hollers expense. When the couple first noticed chipmunks around their Forest Point cabin, they befriended the little striped rodents with peanuts. It wasn't long, however, before the chipmunks decided to go one better, and invaded the Holler green pea patch. Annoyed at this abuse of their hospitality, the Hollers scattered mothballs around the garden to repel the chipmunks (a suggestion from sympathetic neighbors). But then the mothballs disappeared. And the ones the chipmunks didn't carry off, they left their teeth marks in. *Looks like there are only two choices open now: hire a PCO or get heavier mothballs.*

* * *

Stu's now a Don. Stuart R. Lyon, owner of Lyon Pest Control, Phoenix, is the new president of the Dons Club of Phoenix. The Dons is a limited membership club composed of 50 businessmen who have helped make the Lost Dutchman Mine, in the nearby Superstition Mountains, world famous. Each year, on the first Sunday in March, the Dons take about 1,000 sight-seers into the Superstition range for a day-long excursion and a look-see at the area where Jacob Walz mined his rich quartz gold ore.

* * *

Stringent PCO Law. Hans Kaiser, a pest control operator from East Germany, is locked in the Soviet pokey for 10 months for some questionable remarks he made about Red functionaries after quaffing a few too many drinks. During the operator's trial, the prosecutor railed merry-maker Kaiser with being a "pest to Communist progress." *Now the Soviets are up against a resistance problem all their own.*

* * *

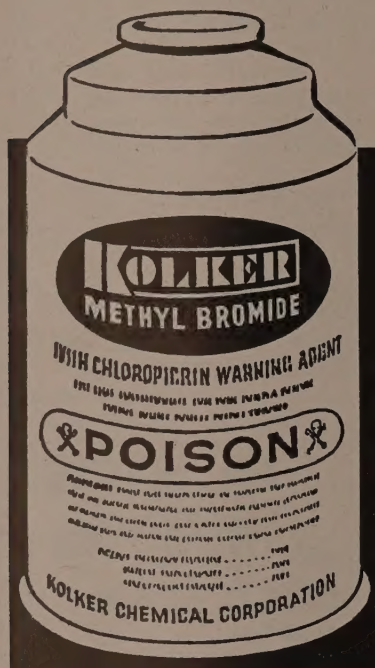
Birthday year. This was a big year for anniversaries in the industry. PC magazine and the NPCA stepped into the 25-year circle, and now we learn G. Darrell Cardiff of Cardiff Pest Control, Inc., Santa Cruz, Calif., celebrated his 20th year in business last month. In October 1938, Darrell began making service rounds with one piece of equipment, while wife, Helen, minded the store; now they have a staff of 14 employees and 10 service vehicles. Among Cardiff Pest Control officers are Charles E. Lewis, secretary and service manager, and Robert Cardiff, treasurer. Bob's a medical student at the University of California.

* * *

Borers of international set. In Brisbane, Australia, the Queensland Housing Commission put up 2,400 prefabricated houses imported from France, then discovered many were infested by the European softwood borer. *We've heard of houses with everything built in, but these are the first built for PCO service.*

* * *

No phobia for travel. As one of the industry's busiest ambassadors, Charles Pomerantz, Bell Exterminating Co., Inc., New York, N. Y., is a hard man to keep track of. His latest itinerary: a trip to California for a talk before PCOs of California, Inc. on "The Role of the PCO in the Management of Insect Phobias," then on to Hamilton, Mont. where he gave the same address before the 13th Annual North-West Conference of Diseases in Nature Communicable to Man. Both talks came within a two-week period.



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Today federal regulations permit only the use of technical *piperonyl butoxide,* in combination with *pyrethrins* or *allethrin,* on harvested nuts and fresh fruits, including tomatoes, cherries, grapes and berries.

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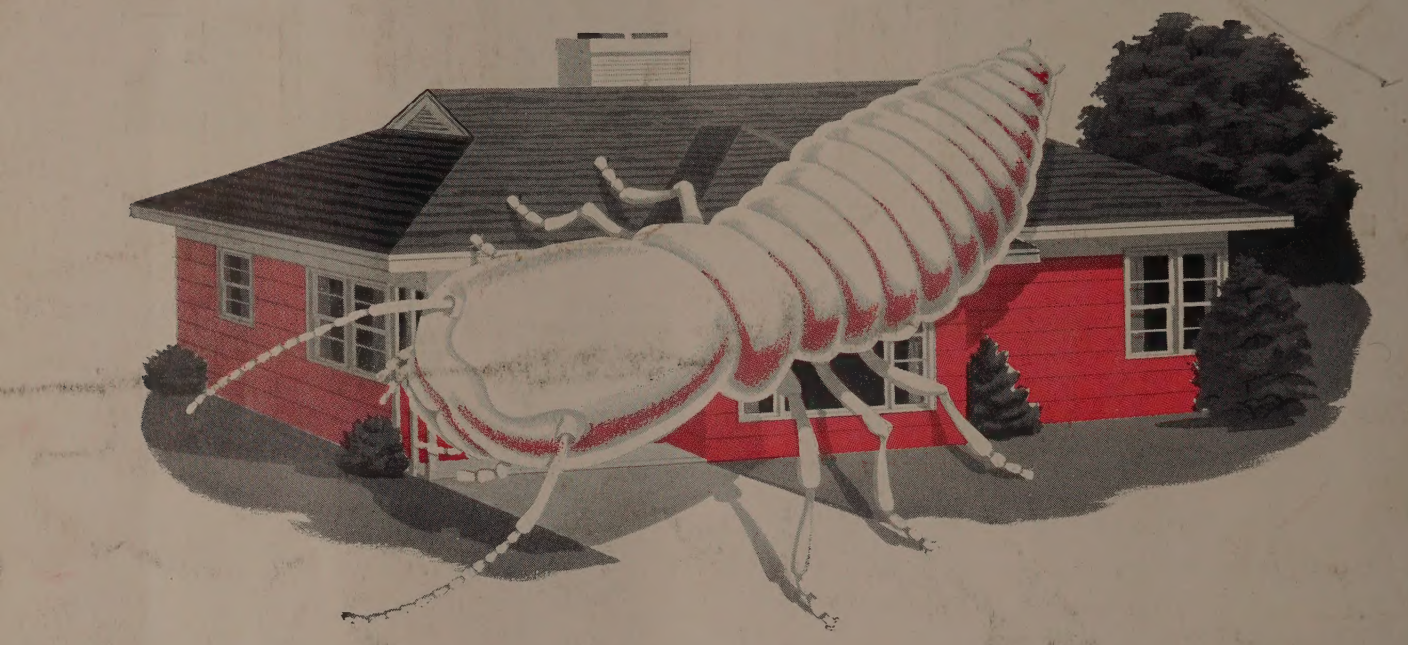

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